

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 05 50 00 – Metal Fabrications

Page 7 of 7

---

- .9 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .10 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
- .11 Touch-up high build epoxy coated finishes.

**3.5 FINISH PREPARATION OF UNGALVANIZED EXTERIOR SURFACES**

- .1 Clean exterior surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes or blowing with clean dry compressed air.

**3.6 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.7 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 05 51 29 – Metal Stairs and Ladders

Page 1 of 5

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 29 83 – Payment Procedures for Testing Laboratory Services.
- .2      Section 01 33 00 - Submittal Procedures.
- .3      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4      Section 05 12 23 – Structural Steel for Buildings.
- .5      Section 05 31 00 – Steel Decking.
- .6      Section 05 50 00 - Metal Fabrications.
- .7      Section 09 91 13 - Exterior Painting.
- .8      Section 09 91 23 - Interior Painting.

**1.2      REFERENCES**

- .1      American National Standards Institute/National Association of Architectural Metal Manufacturers (ANSI/NAAMM)
  - .1      ANSI/NAAMM MBG531, Metal Bar Grating Manual.
- .2      American Society for Testing and Materials,(ASTM)
  - .1      ASTM A53/A53M, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2      ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .3      ASTM A325M, Specification for Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength.
- .3      Canadian Standards Association (CSA)
  - .1      CAN/CSA-G40.20/G40.21, General Requirements for Rolled or welded Structural Quality Steel.
  - .2      CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3      CSA W59, Welded Steel Construction (Metal Arc Welding/Imperial Version).
- .4      National Association of Architectural Metal Manufactures (NAAMM)
  - .1      AMP 510, Metal Stair Manual.
- .5      Steel Structures Painting Council (SSPC)
  - .1      Systems and Specifications Manual, Volume 2.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 05 51 29 – Metal Stairs and Ladders

Page 2 of 5

**1.3 SYSTEM REQUIREMENTS**

- .1 Design metal stair, balustrade and landing construction and connections to NBCC vertical and horizontal live load requirements.
- .2 Detail and fabricate stairs to NAAMM Metal Stairs Manual.

**1.4 SUBMITTAL PROCEDURES**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets.
- .2 Shop Drawings
  - .1 Submit shop drawing bearing the stamp of a qualified professional engineer registered and licensed in the Province of Newfoundland and Labrador.
  - .2 Shop drawings to indicate stair construction details including:
    - .1 Dimensions.
    - .2 Sizes of steel sections.
    - .3 Thickness of steel sheet.
    - .4 Welding, bolting, anchoring and any and all attachment methods for stair construction.

**1.5 QUALITY ASSURANCE**

- .1 Test Reports: Submit Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Submit Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 Steel sections: to CAN/CSA-G40.20/G40.21 Grade 300 W.
- .2 Steel plate: to CAN/CSA-G40.20/G40.21, Grade 260 W.
- .3 Steel pipe: to ASTM A53/A53M, standard weight, schedule 40 seamless black.
- .4 Steel tubing: to CAN/CSA-G40.20/G40.21, Grade 300W, square, wall thickness, sizes and dimensions as indicated on drawings.
- .5 Steel bars to CAN/CSA-G40.21, diameter as indicated on drawings.
- .6 Welding materials: to CSA W59.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 05 51 29 – Metal Stairs and Ladders

Page 3 of 5

- .7 Bolts: to ASTM A307.
- .8 High strength bolts: to ASTM A325M.
- .9 Metal reinforced autobody filler: 2-part, direct-to-metal, sandable filler.
  - .1 Standard of acceptance: 3M Bondo

## **2.2 SURFACE PREPARATION AND SHOP PAINTING**

- .1 Clean and prepare structural steel in accordance with SSPC and NACE surface preparation standards.
- .2 Apply paint under cover; on dry surfaces when both surface and air temperatures are above 5° C. Maintain protection and minimum temperature until paint is thoroughly dry.
- .3 Apply one coat of primer in the shop to steel surfaces.
- .4 Surface preparation and prime painting schedule:
  - .1 SSPC SP-6/NACE No. 3 Commercial Blast Cleaning.
  - .2 CISC/CPMA 2-75: Quick-Drying Primer for use on Structural Steel (suitable for finish coating as per Section 09 91 23 - Interior Painting).
    - .1 Tint primer grey.

## **2.3 STEEL PAN STAIRS**

- .1 Refer to architectural drawings for specific details related to stair fabrication.
- .2 Fabricate stairs with closed riser steel pan construction.
- .3 Provide clip angles for fastening of furring channels, where applied finish is indicated for underside of stairs and landings.
- .4 Extend stringers around mid landings to form steel base.
- .5 Close ends of stringers where exposed.
- .6 Fill gaps between stitch welds or other joins in metal components with metal-reinforced autobody-type filler to achieve a monolithic appearance to stair or guard elements that are composed of multiple pieces.

## **2.4 BALUSTRADES**

- .1 Construct balustrade posts, rails, handrails and guards from square HSS tubing, steel pipe, steel rods, bars or steel plate. Exact balustrade types and sizes are indicated on drawings.
- .2 Cap and continuous weld all exposed ends of hollow sections.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 05 51 29 – Metal Stairs and Ladders

Page 4 of 5

---

- .3 Continuous weld posts to stringers as indicated on drawings.
- .4 Provide steel bar pickets of diameter and at spacing indicated on drawings.

**2.5 ACCESS LADDERS INTERIOR/EXTERIOR**

- .1 Stringers, steel rungs and brackets: sizes and shapes as indicated on drawings.
- .2 Weld brackets to stringers at 1200 mm c.c., complete with fixing anchors.
- .3 Shop coat prime interior ladders after fabrication.
- .4 Exterior ladders to be hot-dipped galvanized.

**PART 3 EXECUTION**

**3.1 FABRICATION**

- .1 Fabricate to NAAMM, Metal Stair Manual.
- .2 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed connections of same material, colour and finish as base material on which they occur.
- .3 Accurately form connections with exposed faces flush; mitres and joints tight. Make risers of equal height.
- .4 Grind or file exposed welds and steel sections smooth. Use autobody filler to hide imperfections and fill gaps at welds or joins.
- .5 Shop fabricate stairs in sections as large and complete as practical.

**3.2 INSTALLATION OF STAIRS**

- .1 Install in accordance with NAAMM, Metal Stair Manual.
- .2 Install plumb and true in exact locations, using welded connections wherever possible to provide rigid structure. Provide anchor bolts, bolts and plates for connecting stairs to structure.
- .3 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .4 Do welding work in accordance with CSA W59 unless specified otherwise.
- .5 Touch up shop primer to bolts, welds, and burned or scratched surfaces at completion of erection.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 05 51 29 – Metal Stairs and Ladders

Page 5 of 5

---

**3.3 ACCESS LADDERS**

- .1 Install access ladders in locations as indicated.

**3.4 CLEANING**

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal stairs and ladders installation.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 10 00 – Rough Carpentry

Page 1 of 5

**PART 1      GENERAL****1.1            RELATED SECTIONS**

- .1      Section 01 74 21 – Construction /Demolition Waste Management and Disposal.
- .2      Section 07 52 00 - Modified Bituminous Membrane Roofing
- .3      Section 07 91 00 - Joint Sealants.
- .4      Section 09 21 16 - Gypsum Board Assemblies.

**1.2            REFERENCES**

- .1      Canadian Standards Association (CSA)
  - .1      CSA A123.2, Asphalt Coated Roofing Sheets.
  - .2      CAN/CSA-A247, Insulating Fiberboard.
  - .3      CSA B111, Wire Nails, Spikes and Staples.
  - .4      CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .5      CSA O112 Series, CSA Standards for Wood Adhesives.
  - .6      CSA O121, Douglas Fir Plywood.
  - .7      CAN/CSA-O141, Softwood Lumber.
  - .8      CSA O151, Canadian Softwood Plywood.
  - .9      CAN/CSA-O325.0, Construction Sheathing.
- .2      National Lumber Grades Authority (NLGA)
  - .1      Standard Grading Rules for Canadian Lumber.

**1.3            QUALITY ASSURANCE**

- .1      Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2      Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

**1.4            DELIVERY, STORAGE, AND HANDLING**

- .1      Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2      Deliver materials to job site in dry condition.
- .3      Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 10 00 – Rough Carpentry

Page 2 of 5

- .4 Store lumber and panel materials flat and neatly stacked. Do not open metal banded materials until required for use.

## **1.5 SUBMITTALS**

- .1 Submit proof of compatibility between Alkaline Copper Quaternary (ACQ) pressure treated lumber and fasteners to be utilized.

## **PART 2 PRODUCTS**

### **2.1 FRAMING AND LUMBER MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, No. 1 or No. 2 grade, S4S, moisture content 19% (S-dry) or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Framing and board lumber: in accordance with NBC.
- .3 Furring, blocking, nailing strips, grounds, rough bucks, fascia backing and sleepers:
  - .1 Board sizes: "Standard" or better grade.
  - .2 Dimension sizes: "Standard" light framing or better grade.
  - .3 Post and timbers sizes: "Standard" or better grade.
- .4 Composite wood seat boards for precast concrete bleacher system:
  - .1 Recycled plastic lumber: 38 mm thick x 140 mm wide with chamfered or beveled edges.
  - .2 All hardware to be stainless steel. Seat planks connected to bases with minimum #12 screws, counter sunk. Blocking below seat board to be anchored to bleacher structure with wedge or expansion anchors. Heads counter sunk.
  - .3 Colour to be selected from manufacturer's standard range.
- .5 Roof-top screen:
  - .1 Western Red Cedar, kiln-dried, select knotty or better, knots are sound and tight.
  - .2 Dressed, square four edges.
  - .3 38 mm x 140 mm.
  - .4 Finish: leave cedar siding unfinished.
  - .5 All fasteners to be stainless steel.
- .6 Use pressure treated material where indicated to AWPA U1, T1 and P5 arsenic and chromium free pressure treated wood produced in accordance with ACQ Preserve® (quaternary ammonium compound).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 10 00 – Rough Carpentry

Page 3 of 5

**2.2 PANEL MATERIALS**

- .1 Plywood:
  - .1 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.0.
  - .2 Douglas fir plywood (DFP): to CSA O121, standard construction unless otherwise noted.
  - .3 Canadian softwood plywood (CSP): to CSA O151, standard construction unless otherwise noted.
  - .4 Aspen/Poplar: to CSA 0153 – Poplar.
  - .5 All plywood for electrical and communications equipment backboards to be fire-retardant treated construction plywood:
    - .1 Flame Spread as per ASTM E-84: 25 or less.
    - .2 Smoke Developed as per ASTM E-84: 450 or less.
    - .3 Thickness: 16 mm unless otherwise noted.
  - .6 Insulating fiberboard sheathing: to CAN/CSA-A247.

**2.3 ACCESSORIES**

- .1 Surface-applied end-cut wood preservative: clear or copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.
- .2 Sealants: Section 07 91 00 – Joint Sealants.
- .3 General purpose adhesive: to CSA O112 Series.
- .4 Nails, spikes and staples: to CSA B111.
- .5 Bolts: diameter and length as indicated, complete with nuts and washers.
- .6 Construction adhesive:
  - .1 One component, polyurethane based moisture-curing adhesive.
  - .2 VOC compliant for LEED containing no chlorinated solvents.
  - .3 Must meet or exceed ASTM D3498 and C557
  - .4 Standard of acceptance: LePage PL Premium.
- .7 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

**2.4 FASTENER FINISHES**

- .1 Stainless steel where noted.
- .2 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work, interior highly humid areas and fire-retardant treated lumber.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 10 00 – Rough Carpentry

Page 4 of 5

---

**PART 3      EXECUTION**

**3.1      WOOD PRESERVATIVE**

- .1      Where required, treat surfaces of material with wood preservative, before installation.
- .2      Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.
- .3      Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .4      Treat all material as indicated as follows:
  - .1      All wood in contact with the ground.
  - .2      Wood fascia, backing, curbs, nailers.
  - .3      Wood furring for sheeting/siding on outside surface of exterior masonry concrete walls.

**3.2      INSTALLATION**

- .1      Comply with requirements of NBC latest edition, supplemented by following paragraphs.
- .2      Install members true to line, levels and elevations, square and plumb.
- .3      Construct continuous members from pieces of longest practical length.
- .4      Install spanning members with "crown-edge" up.
- .5      Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .6      Install subflooring and combined subfloor and underlay with panel end-joints located on solid bearing, staggered at least 800 mm.
  - .1      In addition to mechanical fasteners, apply subflooring adhesive under panels installed on wood joints. Place continuous adhesive bead in accordance with manufacturer's instructions, single-bead on each joist and double-bead on joists where panel ends butt.
  - .2      Use decking screws for mechanical fasteners when weather conditions are unsuitable for subflooring adhesive.
- .7      Install wall sheathing in accordance with manufacturer's printed instructions.
- .8      Install furring and blocking as required to space-out and support casework; cabinets; wall and ceiling finishes; facings, fascia, soffits or other cladding components; signage; electrical equipment mounting boards; door stops and other door hardware; washroom accessories; and other items of work required to be attached to steel stud framing, drywall or other areas as required.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 06 10 00 – Rough Carpentry

Page 5 of 5

---

- .1 Minimum blocking composition to be 2 layers of 16 mm plywood.
- .2 In metal stud and gypsum board walls, blocking to span a minimum of two stud spaces, attached to three studs.
  
- .9 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
  
- .10 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners. Coordinate height of roof curbs with Section 07 52 00 – Modified Bituminous Membrane Roofing.
  
- .11 Install sleepers as indicated.
  
- .12 Use dust collectors and high-quality respirator masks when cutting or sanding wood panels.

**3.3 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.
- .3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 20 00 - Finish Carpentry

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 61 00 - Common Product Requirements.
- .3      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4      Section 06 40 00 - Architectural Woodwork.
- .5      Section 06 47 00 – Plastic Laminate Finishes.
- .6      Section 09 91 23 - Interior Painting.

**1.2            REFERENCES**

- .1      American National Standards Institute (ANSI)
  - .1      ANSI A208.1, Particleboard.
  - .2      ANSI A208.2, Medium Density Fibreboard (MDF).
- .2      Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  - .1      AWMAC Quality Standards for Architectural Woodwork.
- .3      American Society for Testing and Materials (ASTM)
  - .1      ASTM E1333, Test Method for Determining Formaldehyde Concentrations in Air and Emissions Rates from Wood Products Using a Large Chamber.
- .4      Canadian Standards Association (CSA)
  - .1      CSA B111, Wire Nails, Spikes and Staples.
  - .2      CSA O115, Hardwood and Decorative Plywood.
  - .3      CAN/CSA O141, Softwood Lumber.
  - .4      CSA O151, Canadian Softwood Plywood.
- .5      National Hardwood Lumber Association (NHLA)
  - .1      Rules for the Measurement and Inspection of Hardwood and Cypress.
- .6      National Lumber Grades Authority (NLGA)
  - .1      Standard Grading Rules for Canadian Lumber.

**1.3            QUALITY ASSURANCE**

- .1      All Fabrications shall be in accordance with the Quality Standards Manual of the Architectural Woodwork Manufacturer's Association of Canada (AWMAC).

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 20 00 - Finish Carpentry

Page 2 of 3

---

**1.4 SUBMITTALS**

- .1 Indicate details of construction, profiles, jointing, fastening and other related details.
- .2 Indicate materials, thicknesses, finishes and hardware.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Protect materials against dampness during and after delivery.
- .3 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

**PART 2 PRODUCTS**

**2.1 LUMBER MATERIAL**

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC custom premium grade, moisture content as specified.
- .2 Machine stress-rated lumber is acceptable.
- .3 Hardwood lumber: maple or white birch species, no heartwood, moisture content 10 % or less in accordance with following standards:
  - .1 National Hardwood Lumber Association (NHLA).
  - .2 AWMAC custom grade, moisture content as specified.

**2.2 PANEL MATERIAL**

- .1 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .2 Hardwood plywood: to CSA O115 with maple or white birch veneer finish, no heartwood in exposed/visible locations.
- .3 Medium density fibreboard (MDF): to ANSI A208.2, density 640-800 kg/m<sup>3</sup>.

**2.3 ACCESSORIES**

- .1 Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.
- .2 Wood screws: plain, type and size to suit application.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 06 20 00 - Finish Carpentry**

**Page 3 of 3**

---

- .3 Splines: wood
- .4 Adhesive: as recommended by manufacturer.

**PART 3      EXECUTION**

**3.1            INSTALLATION**

- .1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.
- .2 Scribe and cut material as required to fit abutting walls and surfaces; fit properly into recesses; and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely
- .4 Form joints to conceal shrinkage.
- .5 Install window trims in single lengths without splicing.
- .6 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
- .7 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.
- .8 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 1 of 8

**PART 1      GENERAL****1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 45 00 - Quality Control.
- .3      Section 01 61 00 - Common Product Requirements.
- .4      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .5      Section 06 20 00 – Finish Carpentry.
- .6      Section 06 47 00 – Plastic Laminate Finishes.
- .7      Section 06 47 01 – Solid Surface Fabrications.
- .8      Section 07 92 00 – Joint Sealants.

**1.2            REFERENCES**

- .1      American National Standards Institute (ANSI)
  - .1      ANSI/NPA A208.1, Particle board.
  - .2      ANSI A208.2, Medium Density Fiberboard (MDF) for Interior Applications.
  - .3      ANSI/HPVA HP-1, Standard for Hardwood and Decorative Plywood.
  - .4      ANSI/NEMA LD-3, High-Pressure Decorative Laminates (HPDL).
- .2      American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)
  - .1      ANSI/BHMA A156.9, Cabinet Hardware.
  - .2      ANSI/BHMA A156.11, Cabinet Locks.
  - .3      ANSI/BHMA A156.16, Auxiliary Hardware.
  - .4      ANSI/BHMA A156.18, Materials and Finishes.
- .3      Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1      Architectural Woodwork Quality Standards Illustrated.
- .4      American Society for Testing and Materials (ASTM)
  - .1      ASTM E1333, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
- .5      Canadian General Standards Board (CGSB)

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 2 of 8

- .1 CAN/CGSB-71.20, Adhesive, Contact, Brushable.
- .6 Canadian Standards Association (CSA)
  - .1 CSA B111, Wire Nails, Spikes and Staples.
  - .2 CSA O112.10, Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
  - .3 CSA O121, Douglas Fir Plywood.
  - .4 CSA O141, Softwood Lumber.
  - .5 CSA O151, Canadian Softwood Plywood.
  - .6 CSA O153, Poplar Plywood.
- .7 National Hardwood Lumber Association (NHLA)
  - .1 Rules for the Measurement and Inspection of Hardwood and Cypress.
- .8 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber.
- 1.3 SUBMITTALS**
  - .1 Millwork and Casework:
    - .1 Indicate details of construction, profiles, jointing, fastening and other related details. Scales:
      - .1 profiles full size, details 1/2 full size.
    - .2 Indicate all materials, thicknesses, finishes and hardware.
    - .3 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
  - .2 Hardware List:
    - .1 Submit contract hardware list.
    - .2 Indicate specified hardware, including make, model, material, function, finish and other pertinent information.
  - .3 Submit duplicate colour samples of laminated plastic and MCP for colour selection.
  - .4 Submit duplicate samples of laminated plastic joints, edging, cutouts and postformed profiles.
- 1.4 MOCK-UPS**
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
  - .2 Shop prepare one base cabinet unit, wall cabinet, counter top, shelving unit, complete with hardware and shop applied finishes, and install on project in designated location.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 3 of 8

- .3 Allow 24 hours for inspection of mock-up by Owner's Representative before proceeding with this work.
- .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 – Common Product Requirements.
- .2 Protect millwork against dampness and damage during and after delivery.
- .3 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
- .4 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .5 Store and protect architectural woodwork from nicks, scratches, and blemishes.
- .6 Replace defective or damaged materials with new.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 19 % or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC premium grade, moisture content as specified.
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Hardwood lumber: moisture content 10% or less in accordance with following standards:
  - .1 National Hardwood Lumber Association (NHLA).
  - .2 AWMAC premium grade, moisture content as specified.
- .4 Douglas fir plywood (DFP): to CSA O121, standard construction.
- .5 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .6 Hardwood plywood: to ANSI/HPVA HP-1.
- .7 Poplar plywood (PP): to CSA O153, standard construction.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 4 of 8

- .8 Birch plywood: to AWMAC Natural.
- .9 Hardboard: to CAN/CGSB – 11.3.
- .10 Medium density fibreboard (MDF): to ANSI A208.2, density 769 kg/m<sup>3</sup>
  - .1 Must meet the performance requirements of ANSI A208.2
- .11 Laminated plastic: Section 06 47 00 – Plastic Laminate Finishes.
- .12 Thermofused Melamine: to NEMA LD3 Grade VGL.
  - .1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
- .13 Nails and staples: to CSA B111.
- .14 Wood screws: steel plain, type and size to suit application.
- .15 Splines: wood.
- .16 Sealant: Section 07 92 00 – Joint Sealants.
- .17 Glazing: provide glazing to the requirements of Section 08 80 50 – Glazing.
- .18 Stainless steel sheet: to ASTM A 240/A240M, Type 316 alloy with ANSI No. 4 brushed finish.

## 2.2 MANUFACTURED UNITS

- .1 Casework.
  - .1 General construction:
    - .1 Fabricate caseworks to AWMAC premium quality grade.
    - .2 Shop assembled casework only. Knock-down construction not acceptable.
    - .3 Fabricate casework using frameless construction techniques, using System 32 European hole spacing conventions.
    - .4 Use either concealed fasteners or dowels as required to avoid exposed fasteners.
    - .5 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
      - .1 S2S is acceptable.
      - .2 Board sizes: Standard or better grade.
      - .3 Dimension sizes: Standard light framing or better grade.
    - .6 Framing birch or maple species, NHLA premium grade.
  - .2 Carcass:
    - .1 Melamine coated particleboard (MCP), premium grade, 19mm thick.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 5 of 8

- .1 Edge banding on exposed edges: Machine finish edges with 3 mm PVC edging. Provide 1mm bullnose at all edges. Corner joints to have a smooth, eased edge; not a sharp edge.
- .2 Install PVC edge banding on bottom edge of all base supports and internal gables that are in contact with the floor. There are to be no raw particle board edges in contact with the floor.
- .3 Backs: 6.4 mm MCP
- .4 Exposed gables:
  - .1 Plastic laminate covered particleboard, premium grade 19 mm thick.
    - .1 Plastic laminate thickness: 1.27 mm.
    - .1 Edge banding on exposed edges: Machine finish edges with 3 mm PVC edging. Provide 1mm bullnose at all edges. Corner joints to have a smooth, eased edge; not a sharp edge.
    - .2 Install PVC edge banding on bottom edge of all exposed gables that are in contact with the floor. There are to be no raw particle board edges in contact with the floor.
  - .9 Shelving: Melamine coated particleboard (MCP), premium grade, 16mm thick.
    - .3 Edge banding on exposed edges: Machine finish edges with 3 mm PVC edging. Provide 1mm bullnose at all edges.
- .2 Pre-manufactured Drawer Boxes:
  - .1 Steel profile system for variable drawer widths; white finish; no bottom panel machining; 100 mm nominal height. Acceptable product: Innotech Drawers by Hettich.
  - .2 Include full extension runners designed for 30 kg capacity; spring-operated self closing action with stop control; integrated roll-out prevention; special provision for noiseless operation. Acceptable product: Quadro V6 Silent System by Hettich.
  - .3 Provide lengthwise stainless steel railing kits for all drawers exceeding 150 mm depth. Acceptable product: Innotech Railing by Hettich.
  - .4 Provide 16 mm base pan and back panel of 16 mm MCP to match shelving. Finish top edge of back panel with 3 mm PVC edging.
- .3 Casework Doors and Drawer Fronts:
  - .1 Fabricate doors to AWMAC premium grade supplemented as follows:
    - .1 Plastic laminate covered particleboard (both sides), premium grade 19 mm thick.
    - .2 Plastic laminate thickness: 1.27 mm.
    - .3 Edge banding: Machine finish edges with 3 PVC edging. Provide 1mm bullnose at all edges. Corner joints to have a smooth, eased edge; not a sharp edge.

## **2.3 CABINET HARDWARE**

- .1 All cabinet hardware: to ANSI/BNMA A156.9.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 6 of 8

- .2 Hinges:
  - .1 Fully concealed European style hinges with side and height adjustment, wrap-around mounting plates and > 105° opening.
  - .2 Acceptable product: Blum Clip Top 107° Series.
- .3 Door/Drawer Pulls:
  - .1 "D" shaped, 8 mm diameter x 104 mm long, metal pull, stainless steel, brushed nickel or stainless steel finish.
  - .2 Install door/drawer pulls on doors and drawers, unless otherwise noted.
    - .1 Permanently secure door/drawer pulls with epoxy adhesive in addition to supplied screws.
- .4 Door and Drawer Bumper:
  - .1 Clear plastic or rubber press-in bumpers: 8 mm x 2 mm top, 8 mm x 5 mm OD.  
Acceptable product: 59042011 by Richelieu Hardware Limited.
- .5 Shelf Clips for cabinets and shelving units:
  - .1 Holes and pins method with L-shaped metal pins, nickel finish or similar.
- .6 Counter brackets:
  - .1 Provide and install brackets as indicated on drawings. For solid surfacing counters, space brackets a maximum of 610 mm OC.
  - .2 Products:
    - .1 Eclipse Counter Brackets by Rakks. Product # EC0808.
- .7 Fastenings:
  - .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
  - .2 Exposed fastening devices to match finish of hardware.
  - .3 Use fasteners compatible with material through which they pass.

## **2.4 FABRICATION**

- .1 Set nails and countersink screws apply stained wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .3 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .4 Provide cutouts to accommodate plumbing piping and fixtures, appliances, conduit, outlet boxes and any other fittings, equipment or fixtures as required.
- .5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 40 00 – Architectural Woodwork

Page 7 of 8

---

- .6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .7 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .8 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.
- .9 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

**PART 3      EXECUTION**

**3.1            INSTALLATION**

- .1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.
- .2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.
- .3 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.
- .4 Use draw bolts in countertop joints.
- .5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, conduit, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with section 07 92 00 – Joint Sealants.
- .7 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.
- .8 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements. Fit hardware accurately and securely.
- .9 Lubricate hardware and other moving parts, as recommended by manufacturer.
- .10 Adjust cabinet door hardware to provide tight fit at contact points with frames.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 06 40 00 – Architectural Woodwork

Page 8 of 8

---

**3.2 CLEANING**

- .1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.
- .2 Remove excess glue from surfaces.

**3.3 PROTECTION**

- .1 Protect millwork and cabinet work from damage until final inspection.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 00 – Plastic Laminate Finishes

Page 1 of 4

---

**PART 1      GENERAL**

**1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 01 78 00 - Closeout Submittals.
- .4      Section 06 20 00 - Finish Carpentry.
- .5      Section 06 40 00 - Architectural Woodwork.

**1.2      REFERENCES**

- .1      American National Standards Institute (ANSI)
  - .1      ANSI 208.1, Particleboard.
  - .2      ANSI A208.2, Medium Density Fibreboard (MDF) for Interior Applications.
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-71.20, Adhesive, Contact, Brushable.
- .3      Canadian Standards Association (CSA International)
  - .1      CSA O112.10, Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
  - .2      CSA O121, Douglas Fir Plywood.
  - .3      CSA O151, Canadian Softwood Plywood.
  - .4      CSA O153, Poplar Plywood.
- .4      National Electrical Manufacturers Association (NEMA)
  - .1      NEMA LD3, High Pressure Decorative Laminates.

**1.3      SUBMITTALS**

- .1      Submit manufacturer's printed product literature, specifications and data sheet.
- .2      Submit duplicate samples of joints, edging, cutouts and postformed profiles.
- .3      Provide maintenance data for laminate work for incorporation into maintenance manual.
- .4      Submit manufacturer's instructions.

**1.4      QUALITY ASSURANCE**

- .1      Provide Certificate of Quality Compliance upon completion of fabrication.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 00 – Plastic Laminate Finishes

Page 2 of 4

- .2 Provide Certificate of Quality Compliance upon satisfactory completion of installation.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Maintain relative humidity between 25 and 60% at 22°C during storage and installation.
- .3 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .4 Store and protect laminate, adhesive, and core materials from nicks, scratches, and blemishes.
- .5 Replace defective or damaged materials with new.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- .1 Laminated plastic for flatwork: to NEMA LD 3.
- .1 Type: General purpose.
- .2 Grade: HGS.
- .3 Size: 1.27 mm thick.
- .4 Colour: multilayered or solid.
- .5 Pattern: as selected from manufacturer's standard range. Refer to room finish schedule or drawings for colour selection.
- .6 Finish: satin.
- .2 Laminated plastic for postforming work: to NEMA LD 3.
- .1 Type: Postforming.
- .2 Grade: HGP.
- .3 Size: 1.0 mm thick.
- .4 Colour: multilayered or solid
- .5 Pattern: as selected from manufacturer's standard range. Refer to room finish schedule or drawings for colour selection.
- .6 Finish: satin.
- .3 Laminated plastic for backing sheet: to NEMA LD 3.
- .1 Type: Backer.
- .2 Grade: BKH.
- .3 Size: 0.75 mm thick.
- .4 Colour: white.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 00 – Plastic Laminate Finishes

Page 3 of 4

- .4 Laminated plastic for liner: to NEMA LD 3.
  - .1 Type: Cabinet Liner.
  - .2 Grade: CLS.
  - .3 Size: 0.75mm thick.
  - .4 Colour: white.
- .5 Plywood core: to CSA O153 solid two sides, Grade Popular Plywood, 19 mm thick.
- .6 Particleboard core: to ANSI 208.1, sanded faces, of thickness indicated.
- .7 Laminated plastic adhesive: urea resin adhesive to CSA O112.10, contact adhesive to CAN/CGSB-71.20, resorcinol resin adhesive to CSA O112.10, polyvinyl adhesive to CSA O112.10, two component epoxy thermosetting adhesive.
- .8 Sealer: water resistant sealer on glue acceptable to laminate manufacturer.
- .9 Sealants: Silicone based material to CGSB 19-GP-22M.
- .10 Draw bolts and splines: as recommended by fabricator.

**2.2****FABRICATION**

- .1 Comply with NEMA LD 3, Annex A.
- .2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .3 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.
- .5 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
- .6 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20°. Do not mitre laminate edges.
- .7 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .8 Apply laminated plastic liner sheet to interior of cabinetry.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 00 – Plastic Laminate Finishes

Page 4 of 4

---

**PART 3      EXECUTION**

**3.1            INSTALLATION**

- .1      Install work plumb, true and square, neatly scribed to adjoining surfaces.
- .2      Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.
- .3      Use draw bolts and splines in countertop joints. Maximum spacing 450 mm oc, 75 mm from edge. Make flush hairline joints.
- .4      Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.
- .5      At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant.

**3.2            CLEANING**

- .1      Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2      Perform care and cleaning with NEMA LD 3, Annex B.
- .3      Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.

**3.3            PROTECTION**

- .1      Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment.
- .2      Protect installed laminated surfaces in accordance with manufacturer's written recommendations.
  - .1      Remove protection only immediately before final inspection.
- .3      Protect installed products and components from damage during construction.
- .4      Repair damage to adjacent materials caused by laminate, adhesive, and core materials installation.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 01 – Solid Surface Fabrications

Page 1 of 5

---

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 78 00 - Closeout Submittals.
- .3      Section 06 40 00 - Architectural Woodwork.
- .4      Section 06 20 00 - Finish Carpentry.

**1.2      REFERENCES**

- .1      American National Standards Institute (ANSI)
  - .1      ANSI Z124.3, Plastic Lavatories.
  - .2      ANSI Z124.6, Plastic Sinks.
  - .3      American Society for Testing and Materials (ASTM)
    - .1      ASTM D256, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
    - .2      ASTM D570, Standard Test Method for Water Absorption of Plastics.
    - .3      ASTM D638, Standard Test Method for Tensile Properties of Plastics
    - .4      ASTM D696, Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C With a Vitreous Silica Dilatometer.
    - .5      ASTM D785, Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
    - .6      ASTM D790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
    - .7      ASTM D2583, Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
    - .8      ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials
    - .9      ASTM G21, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
  - .4      National Electrical Manufacturers Association (NEMA)
    - .1      NEMA LD3, High Pressure Decorative Laminates.

**1.3      SUMMARY**

- .1      This section includes solid surface counter tops for change rooms. Refer to 900 series millwork drawings for further information.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 01 – Solid Surface Fabrications

Page 2 of 5

**1.4 SUBMITTALS**

- .1 Submit duplicate samples: sample size 300 x 300 mm or 300 mm long unless specified otherwise.
- .2 Submit duplicate colour samples of acrylic solid surfacing for colour selection.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Protect against dampness and damage during and after delivery.
- .2 Store in ventilated areas, protected from extreme changes of temperature or humidity.

**1.6 WARRANTY**

- .1 Provide a written guarantee, signed and issued in the name of the owner, by the Solid Surface Manufacturer, stating that the solid surface material is free from manufacturer's defects and will remain free from defects for a period of ten (10) years from the date of Certificate of Substantial Completion.
- .2 Warranty to be non-prorated.

**PART 2 PRODUCTS****2.1 DESIGN BASIS**

- .1 This specification is based on Corian surfaces by DuPont.

**2.2 MATERIALS**

- .1 Solid Acrylic components:
  - .1 Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colours meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
  - .2 Superficial damage to a depth of 0.25 mm shall be repairable by sanding and/or polishing.
  - .3 Performance characteristics:
    - .1 Tensile strength: to ASTM D638 - 6,000 psi.
    - .2 Tensile Modulus: to ASTM D638 -  $1.5 \times 10^{-6}$  psi.
    - .3 Tensile elongation: to ASTM D638 - 0.4% min.
    - .4 Flexural strength: to ASTM D790 - 10,000 psi.
    - .5 Flexural modulus: to ASTM D790 -  $1.2 \times 10^{-6}$  psi.
    - .6 Hardness: to ASTM D785 - >85 Rockwell "M" Scale and to ASTM D2583 - 56 Barcol Impressor.
    - .7 Thermal Expansion: to ASTM D 696 -  $3.02 \times 10^{-5}$  in./in./°C.
    - .8 Gloss (60° Gardner): to ANSI Z124 - 5-75 (matte—highly polished).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 01 – Solid Surface Fabrications

Page 3 of 5

- .9 Light Resistance: to NEMA LD 3-2000 Method 3.3 - (Xenon Arc)  
No effect.
  - .10 Wear and Cleanability: to ANSI Z124.3 & Z124.6 - Passes.
  - .11 Stain Resistance: to ANSI Z124.3 & Z124.6 - Passes.
  - .12 Fungus and Bacteria Resistance: to ASTM G21 & G22 - Does not support microbial growth.
  - .13 Boiling Water Resistance: to NEMA LD 3-2000 Method 3.5 -  
No visible change.
  - .14 High Temperature Resistance: to NEMA LD 3-2000 Method 3.6  
— No - change.
  - .15 Izod Impact: to ASTM D256 Method A - 0.28 ft.-lbs./in. of notch.
  - .16 Ball Impact: to NEMA LD 3-2000 Method 3.8 - No fracture, ½ lb. ball, ½ slab, 144” drop.
  - .17 Water Absorption: to ASTM D570 Long Term - 0.8% on ¼ slab.
  - .18 Flammability: to ASTM E84 - Flame Spread < 25, Smoke Developed < 25.
- .2 Thickness: 13 mm.
  - .3 Edge treatments: as indicated on the drawings.
  - .4 Backsplash and side-splash: coved unless indicated otherwise.

### 2.3 ACCESSORIES

- .1 Joint adhesive: Manufacturer’s standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
- .2 Sealant: Manufacturer’s standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

### 2.4 FABRICATION

- .1 Shop assembly:
  - .1 Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer’s printed instructions and technical bulletins.
- .2 Form joints between components using manufacturer’s standard joint adhesive without conspicuous joints.
  - .1 Reinforce with strip of solid polymer material, 50 mm wide.
- .3 Provide factory cutouts for plumbing fittings and accessories as indicated on drawings.
- .4 Rout and finish component edges with clean, sharp returns.
  - .1 Rout cutouts, radii and contours to template.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 01 – Solid Surface Fabrications

Page 4 of 5

.2 Smooth edges.

**2.5 FINISHES**

.1 Colour:

.1 Typical: equivalent selection to Corian Cost Categories 1 and 2.

.2 Polished finish: gloss range 50-80.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

.1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.

.2 Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

.1 Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

.1 Provide product in largest pieces available.

.2 Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.

.1 Exposed joints/seams shall not be allowed.

.3 Reinforce field joints with solid surface strips extending a minimum of 25 mm on either side of the seam with the strip being the same thickness as the top.

.4 Cut and finish component edges with clean, sharp returns.

.5 Rout Radii and contours to template.

.6 Anchor securely to base cabinets or other supports.

.7 Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in colour to match countertop.

.8 Carefully dress joints smooth, remove surface scratches and clean entire surface.

.9 Install countertops with no more than 3 mm sag, bow or other variation from a straight line.

.2 Coved backsplashes and sidesplashes:

.1 Unless detailed otherwise on drawings, provide coved backsplashes and sidesplashes at all walls and adjacent millwork.

.2 Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on the drawings.

.3 Adhere to countertops using manufacturer's standard color-matched Joint Adhesive.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 06 47 01 – Solid Surface Fabrications

Page 5 of 5

---

**3.3           CLEANING**

- .1   Keep components clean during installation.
- .2   Remove adhesives, sealants and other stains.

**3.4           REPAIR**

- .1   Repair or replace damaged work which cannot be repaired to Owner's Representative satisfaction.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 11 13 – Bituminous Dampproofing

Page 1 of 4

**PART 1      GENERAL****1.1      SECTION INCLUDES**

- .1      Materials and installation for asphalt for use as dampproofing.

**1.2      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 51 00 - Temporary Utilities.
- .3      Section 01 61 00 - Common Product Requirements.
- .4      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

**1.3      REFERENCES**

- .1      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB 37.2, Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
  - .2      CAN/CGSB 37.3, Application of Emulsified Asphalts for Dampproofing or Waterproofing.
  - .3      CAN/CGSB 37.5, Cutback Asphalt Plastic Cement.
  - .4      CGSB 37-GP-9Ma, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
  - .5      CGSB 37-GP-11M, Application of Cutback Asphalt Plastic Cement.
  - .6      CAN/CGSB 37.16, Filled, Cutback, Asphalt for Dampproofing and Waterproofing.
  - .7      CGSB 37-GP-36M, Application for Filled Cutback Asphalts for Dampproofing and Waterproofing.
- .2      National Research Council Canada (NRC)/Institute for Research in Construction (IRC)
  - .1      Canadian Construction Materials Centre (CCMC)

**1.4      PRODUCT DATA**

- .1      Submit product data sheets for bituminous dampproofing products. Including:
  - .1      Product characteristics.
  - .2      Performance criteria.
  - .3      Application methods.
  - .4      Limitations.
- .2      Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, cleaning procedures.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 11 13 – Bituminous Dampproofing

Page 2 of 4

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store materials on supports to prevent deformation.
- .4 Remove only in quantities required for same day use.
- .5 Store materials in accordance with manufacturer's written instructions.

**1.6 PROJECT/SITE ENVIRONMENTAL REQUIREMENTS**

- .1 Temperature, relative humidity, moisture content.
  - .1 Apply dampproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.
  - .2 Do not proceed with Work when wind chill effect would tend to set bitumen before proper curing takes place.
  - .3 Maintain air temperature and substrate temperature at dampproofing installation area above 5°C for 24 hours before, during and 24 hours after installation.
  - .4 Do not apply dampproofing in wet weather.
- .2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.
- .3 Ventilation:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
  - .2 Provide continuous ventilation during and after dampproofing application. Run ventilation system 24 hours per day during installation; provide continuous Ventilation for 3 days after completion of dampproofing installation.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 For application and curing at temperatures above 5 degrees C: waterproof emulsion, mineral colloid emulsifier type to CAN/CGSB 37.2.
  - .1 Package label or bill of lading for bulk hot liquid asphalt must indicate type, flash point, equiviscous temperature range and final blowing temperature.
- .2 For applications and curing at temperatures above 0 degrees C but below 5 degrees C: solvent type waterproofing and dampproofing compound of selected asphalts and fibers to CAN/CGSB 37.16.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 11 13 – Bituminous Dampproofing

Page 3 of 4

- .1 Package label or bill of lading for bulk hot liquid asphalt must indicate type, flash point, equiviscous temperature range and final blowing temperature.
- .3 Primer for applications at temperatures above 0 degrees C but below 5 degrees C: asphalt/solvent cutback to CAN/CGSB 37.9.
- .4 Sealing compound: plastic cutback asphalt cement to CAN/CGSB-37.5. C.
- .1 Drainage board:
  - .1 Dimple raised polypropylene core with a laminated geotextile filter fabric to protect drainage cavity from fines.
  - .2 Specifically designed to cover dampproofing or waterproofing membranes.
  - .3 Standard of acceptance: Sopradrain 10-G.

**PART 3      EXECUTION**

**3.1      PREPARATION**

- .1 Before applying dampproofing:
  - .1 Seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through dampproofing with sealing compound.

**3.2      APPLICATION**

- .1 Do dampproofing in accordance with CAN/CGSB 37.3 and CGSB 37-GP-36M except where specified otherwise.
- .2 Do sealing work in accordance with CGSB 37-GP-11M except where specified otherwise.
- .3 Do priming of surface in accordance with CGSB 37-GP-15M except where specified otherwise.
- .4 Apply primer.
- .5 Cover all areas of dampproofing with drainage board. Filter fabric to face towards backfill.

**3.3      SCHEDULE**

- .1 Install dampproofing and drainage board on the existing foundation wall enclosing any basement rooms/areas where such walls have been excavated and exposed to facilitate new foundation work.
  - .1 Dampproofing is not required on frost walls or foundation elements that do not enclose an interior space.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 11 13 – Bituminous Dampproofing**

**Page 4 of 4**

---

- .2 Apply continuous, uniform coating to exterior faces of foundation walls noted above from 75 mm below finished grade level to, and including, tops of foundation wall footings.
  
- .3 Apply two additional coats of dampproofing to vertical corners and construction joints for a minimum width of 230 mm on each side, and all around and for 230 mm along pipes passing through walls.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 13 – Board Insulation

Page 1 of 5

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 03 30 00 – Cast in Place Concrete.
- .4      Section 04 05 00 – Common Work Results for Masonry.
- .5      Section 04 05 19 – Masonry Anchorage and Reinforcement.
- .6      Section 06 10 00 – Rough Carpentry.
- .7      Section 07 21 20 – Low Expansion Foam Sealant.
- .8      Section 07 27 00 – Air Barriers.

**1.2            REFERENCES**

- .1      American Society for Testing and Materials International, (ASTM).
  - .1      ASTM C1289, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - .2      ASTM C612, Mineral Fibre Block and Board Thermal Insulation.
  - .3      ASTM C1325, Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.
- .2      Underwriters Laboratories of Canada (ULC).
  - .1      CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
  - .2      CAN/ULC-S702, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
  - .3      CAN/ULC-S704, Standard for Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.

**1.3            SUBMITTALS**

- .1      Product Data:
  - .1      Submit manufacturer's printed product literature, specifications and data.
  - .2      Submit two copies of WHMIS MSDS - Material Safety Data Sheets.
- .2      Manufacturer's Instructions:
  - .1      Submit manufacturer's installation instructions.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 13 – Board Insulation

Page 2 of 5

**PART 2      PRODUCTS****2.1      INSULATION**

- .1 Foil-faced polyisocyanurate foam board insulation: to CAN/ULC-S704 and complying with ASTM C1289 Type I, Class 1 closed cell polyisocyanurate foam core laminated between coated (front) and reflective (back) foil facers.
  - .1 For use in masonry cavity wall assemblies, behind brick cladding, and plenum walls on inside-plenum faces (types W5 and W6, partition type P8).
    - .1 CFC and HCFC free, with zero ozone depletion potential.
    - .2 Thermal resistance: RSI 1.14 (R-6.5) per 25 mm.
      - .1 Thickness and/or RSI value as indicated on drawings.
    - .3 Performance characteristics:
      - .1 ASTM E84: Flame spread < 24 and smoke developed < 450.
      - .2 Moisture vapour transmission as per ASTM E96: < 0.1 Perm (5.7ng/Pa·s·m<sup>2</sup>).
      - .3 Water absorption per ASTM C209: <1% by volume.
      - .4 Compressive strength per ASTM D1621: min. 172 kPa (25 psi).
    - .4 Standard of acceptance: EnergyShield Pro by Atlas.
- .2 Mineral fibre board made from basalt rock and slag: to ASTM C612 Type IVB, semi-rigid.
  - .1 For application on exterior of steel stud or concrete block assemblies at exterior wood-clad wall assemblies.
  - .2 Water permeance maximum 1555 ng/Pa·s·m<sup>2</sup>.
  - .3 Flame spread classification: 0.
  - .4 Thermal resistance: RSI 0.76 (R-4.3) per 25 mm.
    - .1 Thickness and/or RSI value as indicated on drawings.
  - .5 Density: 70 kg/m<sup>3</sup>.
  - .6 Standard of acceptance: Cavity Rock by Roxul Inc.
- .3 Extruded polystyrene to CAN/ULC-S701 Type 4, ship-lapped edges except square edges on higher-load product.
  - .1 For below-grade, foundation wall and under-slab applications.
  - .2 Compressive strength:
    - .1 Typical application: minimum 20 psi
    - .2 Under exterior slabs and where indicated on civil drawings: minimum 30 psi.
  - .3 Thermal resistance: RSI 0.88 (R-5) per 25 mm.
    - .1 Thickness and/or RSI value as indicated on civil drawings.
  - .4 Water absorption: to ASTM D2842, maximum 0.3% by volume.
  - .5 Water vapour permeance: to ASTM E96, maximum 90.0 ng/Pa·s·m<sup>2</sup> (1.5 perms).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 13 – Board Insulation

Page 3 of 5

- .6 Standard of acceptance: Styrofoam XPS or Highload by Dow.

## **2.2 ADHESIVE**

- .1 Polyisocyanurate boards: high strength, heavy-bodied thermoplastic rubber adhesive specifically formulated to bond insulation to concrete and masonry surfaces.
- .2 Extruded or expanded polystyrene: as recommended by manufacturers for bonding insulation to substrates indicated on drawings.

## **2.3 ACCESSORIES**

- .1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.
- .2 Insulation clips for masonry cavity wall: purpose made for use with masonry reinforcing ties.
- .1 Refer to section 04 05 19 – Masonry Anchorage and Reinforcement.
- .3 Joint sealing tape: air resistant pressure sensitive adhesive tape as recommended by insulation manufacturer.

## **PART 3 EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions and data sheets.

### **3.2 WORKMANSHIP**

- .1 Install insulation after building substrate materials are dry.
- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .4 Keep combustible insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and CAN/CGA-B149.1 and CAN/CGA-B149.2 type B and L vents.
- .5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 13 – Board Insulation

Page 4 of 5

- .6 Offset both vertical and horizontal joints in multiple layer applications.
- .7 Do not enclose insulation until it has been inspected and approved by Owner's Representative.
- .8 Inspect joints, particularly at interfaces with reinforcing or z-bars, for gaps. Fill all such gaps as they occur with low expansion foam insulation for a complete and continuous installation.

### **3.3 EXAMINATION**

- .1 Examine substrates and immediately inform Owner's Representative in writing of defects.
- .2 Prior to commencement of work ensure:
  - .1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

### **3.4 RIGID INSULATION INSTALLATION**

- .1 Apply adhesive to insulation board in accordance with manufacturer's recommendations.
- .2 Install masonry cavity wall insulation boards over air/vapour barrier membrane. Secure with insulation adhesive and wedges (one wedge per cavity wall tie).
- .3 In addition to adhesive install mineral fibre insulation boards with insulation clips and disk, 2 per 600 x 1200 mm board minimum, fit boards tight, cut off fastener spindle 3 mm beyond disk.
- .4 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 0.15 mm modified bituminous membrane over expansion and control joints using compatible adhesive and primer before application of insulation.
- .5 Carefully inspect for continuity of air barrier prior to placement of insulation.

### **3.5 PERIMETER FOUNDATION INSULATION**

- .1 Exterior application: extend boards vertically below bottom of finish floor slab to depth as indicated on drawings. Install on exterior face of perimeter foundation wall with adhesive.
- .2 Interior and Exterior applications: apply adhesive to secure polystyrene insulation board over concrete or concrete block back-up using gob method:
  - .1 Apply walnut-sized gobs at 150 mm centres on wall insulation.
  - .2 Gobs, when compressed, should be approximately 50 to 60 mm in diameter.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 21 13 – Board Insulation**

**Page 5 of 5**

---

- .3 Imbed insulation boards into adhesive applied as specified, prior to skinning of adhesive.
- .4 Apply hand pressure at several points to achieve maximum contact.

**3.6 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 16 – Blanket Insulation

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 05 41 00 – Structural Metal Stud Framing.
- .4      Section 06 10 00 – Rough Carpentry.
- .5      Section 07 21 13 – Board Insulation.
- .6      Section 09 22 16 – Non-Structural Metal Framing.

**1.2            REFERENCES**

- .1      American Society for Testing and Materials, (ASTM).
  - .1      ASTM C553, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
  - .2      ASTM C665, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
  - .3      ASTM C1320, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
  - .4      ASTM E84, Test Method for Surface Burning Characteristics of Building Materials.
- .2      Canadian Standards Association (CSA International).
  - .1      CSA B111, Wire Nails, Spikes and Staples.
- .3      Underwriters Laboratories of Canada (ULC).
  - .1      CAN/ULC-S702, Standard for Mineral Fibre Insulation.

**1.3            SUBMITTALS**

- .1      Product Data:
  - .1      Submit manufacturer's printed product literature, specifications, data sheet and installation instructions.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 16 –Blanket Insulation

Page 2 of 3

**PART 2      PRODUCTS****2.1      INSULATION**

- .1 Thermal batt insulation for locations as indicated below: Semi-rigid mineral wool batt insulation to CAS/ULC-S702, made from basalt rock and slag. Thickness to completely fill cavity.
  - .1 Within parapet wall assemblies.
  - .2 To fill voids at beam locations behind sheathing layer.
  - .3 Any locations where mineral wool is noted in details.
- .2 Thermal batt insulation for exterior metal stud insulated walls:
  - .1 Unfaced fibreglass thermal insulation to ASTM C665 Type:I.
  - .2 ASTM E 84: flame spread 25 or less, smoke developed 50 or less.
  - .3 Formaldehyde free.
  - .4 Thickness and/or RSI value as indicated on drawings. Typical requirements:
    - .1 152 mm batt = 3.7 RSI (R-21).
- .3 Acoustic batt insulation:
  - .1 For use in interior wall assemblies as noted on Partition Type schedule.
  - .2 Unfaced fibre glass thermal insulation to ASTM C665 Type:I.
  - .3 ASTM E 84: flame spread 25 or less, smoke developed 50 or less.
  - .4 Formaldehyde free.
  - .5 Thickness as indicated on drawings or to fill wall cavity where a thickness is not indicated.
  - .6 Must achieve a minimum STC rating of 46 when forming part of a wall assembly consisting of 92 mm metal studs with a single layer of 13 mm gypsum board each side.

**PART 3      EXECUTION****3.1      MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.2      INSULATION INSTALLATION**

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces and for sound attenuation as noted on drawings.
- .2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 21 16 –Blanket Insulation

Page 3 of 3

---

- .3 Do not compress insulation to fit into spaces.
- .4 Keep combustible insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.
- .5 Do not enclose insulation until it has been inspected and approved by Owner's Representative.

**3.3 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 20 – Low Expanding Foam Sealant

Page 1 of 3

---

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 - Construction Waste Management and Disposal.
- .3      Section 07 26 00 – Vapour Retarders.
- .4      Section 07 27 00 – Air Barriers.
- .5      Section 08 11 00 – Metal Doors and Frames.
- .6      Section 08 11 16 – Aluminum Doors and Frames.
- .7      Section 08 44 13 – Curtain Wall.

**1.2      REFERENCES**

- .1      Canadian Urethane Foam Contractors' Association Inc. (CUFCA)
- .2      Underwriters' Laboratories of Canada (ULC)
  - .1      CAN/ULC-S101, Fire Endurance Tests of Building Construction and Materials.
  - .2      CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.
  - .3      CAN/ULC-S705.1, Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Material Specification.
  - .4      CAN/ULC-S705.2, Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Installer's Responsibilities-Specification.

**1.3      TEST REPORTS**

- .1      Submit test reports, verifying qualities of foam sealant meet or exceed requirements of this specification.
- .2      Submit test reports in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.

**1.4      SAFETY REQUIREMENTS**

- .1      Protect workers as recommended by CAN/ULC-S705.2 and manufacturer's recommendations:
  - .1      Workers must wear gloves, respirators, dust masks, eye protection, protective clothing when applying foam sealant.
  - .2      Workers must not eat, drink or smoke while applying foam sealant.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 20 – Low Expanding Foam Sealant

Page 2 of 3

**1.5 PROTECTION**

- .1 Ventilate area in accordance with Section 01 51 00 - Temporary Utilities.
- .2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and 24 hours after application to maintain non-toxic, unpolluted, safe working conditions.
- .3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
- .4 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.
- .5 Dispose of waste foam sealant daily in location designated by Owner's Representative and decontaminate empty drums in accordance with foam sealant manufacturer's instructions.

**1.6 ENVIRONMENTAL REQUIREMENTS**

- .1 Apply foam sealant only when surfaces and ambient temperatures are within manufacturer's prescribed limits.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 Low expanding, one-component, polyurethane foam sealant, curing to a semi-rigid, closed cell urethane foam providing a RSI of 0.88 per 25 mm. To meet the following physical properties:
  - .1 Density: 25.7 kg/m<sup>3</sup>
  - .2 Compressive Strength Parallel @ 10%: 69-96 psi
  - .3 Tensile Strength: 103 psi
  - .4 Water Vapour Transmission: 5.97 perms
  - .5 Flame Spread: 20
  - .6 Smoke Development: 70
  - .7 Acceptable products:
    - .1 Hilti CF 812 Window and Door Pro Low-Pressure Filler Foam.
    - .2 Hilti CF 512 Cold Weather Pro Foam (for colder installation temperatures).
- .2 Spray-applied, closed-cell rigid polyurethane foam insulation with zero ozone depletion substance blowing agent.
  - .1 Physical properties:
    - .1 Core density as per ASTM D1622: minimum 34.5 kg/m<sup>3</sup> (2.2 lbs/ft<sup>2</sup>)

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 21 20 – Low Expanding Foam Sealant

Page 3 of 3

- .2 Initial thermal resistance per ASTM C518: 1.26 RSI (R-7.2) /25 mm
- .3 Aged thermal resistance per ASTM C518: 1.17 RSI (R-6.6) /25 mm
- .4 Compressive Strength as per ASTM D1621:  $\geq 175$  kPa
- .5 Tensile Strength as per ASTM D1623:  $\geq 350$  kPa
- .6 Water Absorption as per ASTM D2842:  $< 8\%$  by volume
- .7 Water Vapour Permeance (core) 50mm as per ASTM E96:  $< 1.00$  perm (considered to be a vapour barrier).
- .8 CAN/ULC S102:
  - .1 Flame Spread:  $\leq 200$
  - .2 Smoke Development:  $\leq 400$
- .2 Fungi Resistance as per ASTM C1338: No fungal growth.
- .3 Standard of acceptance:
  - .1 Polarfoam PF-7300-0 SOYA
  - .2 Sopra-SPF by Soprema

**PART 3      EXECUTION**

**3.1      APPLICATION**

- .1 Apply foam sealant to clean surfaces in accordance manufacturer's printed instructions. Surfaces to be free of dust, dirt, oil and other foreign materials.
- .2 Cover surfaces not intended to be foamed.
- .3 Apply foam sealant to perimeter of openings indicated and to thickness as recommended by manufacturer. Foam to completely fill all areas into which they are applied. Multiple passes may be required to adequately fill the spaces intended. Trim excess cured foam from finished area.
- .4 The installation will be considered acceptable at the discretion of the Owner's Representative.
- .5 Cover exposed urethane foam sealants to protect from adverse affects from ultraviolet light (sunlight).

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 26 00 – Vapour Retarders

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 – Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 05 41 00 – Structural Metal Stud Framing.
- .4      Section 06 10 00 – Rough Carpentry.
- .5      Section 07 21 16 –Blanket Insulation.

**1.2            REFERENCES**

- .1      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-51.34, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
- .2      Underwriters Laboratories Canada (ULC)
  - .1      CAN/ULC S102, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.3            SUBMITTALS**

- .1      Submit manufacturer's printed product literature, specifications and datasheet and include:
  - .1      Product characteristics.
  - .2      Performance criteria.
  - .3      Limitations.

**1.4            MOCK-UPS**

- .1      Construct mock-up of sheet vapour barrier installation including one lap joint, one inside corner and at one electrical box. Mock-up may be part of finished work.
- .2      Mock-up will be used to judge workmanship, substrate preparation, and material application.
- .3      Allow 24 hours for inspection of mock-up by Owner's Representative before proceeding with vapour barrier work.
- .4      When accepted, mock-up will demonstrate minimum standard of quality required for this work.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 26 00 – Vapour Retarders

Page 2 of 3

**PART 2      PRODUCTS**

**2.1      SHEET VAPOUR RETARDER**

- .1 Polyethylene film: to CAN/CGSB-51.34, 0.25mm thick with a water vapour permeance of not greater than 45 ng/(P·s·m<sup>2</sup>), flame spread rating of less than 150 to CAN/ULC S102.

**2.2      ACCESSORIES**

- .1 Joint sealing tape: UV resistant polypropylene film coated with a solvent-based acrylic adhesive. Specifically design for sealing polyethylene vapour barrier sheeting.
  - .1 Standard of acceptance: Tuck Tape blue sheathing tape for PE vapour barrier.
- .2 Sealant: compatible with vapour retarder, recommended by vapour retarder manufacturer, to Section 07 92 00 - Joint Sealants.
- .3 Staples: minimum 6 mm leg.

**PART 3      EXECUTION**

**3.1      INSTALLATION**

- .1 Use sheets of largest practical size to minimize joints.
- .2 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

**3.2      PERIMETER SEALS**

- .1 Seal perimeter of sheet vapour barrier as follows:
  - .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
  - .2 Lap sheet over sealant and press into sealant bead.
  - .3 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

**3.3      LAP JOINT SEALS**

- .1 Seal lap joints of sheet vapour barrier as follows:
  - .1 Attach first sheet to substrate.
  - .2 Apply continuous bead of sealant over solid backing at joint or apply sheathing tape over joint.
  - .3 Lap adjoining sheet minimum 150 mm.
  - .4 Ensure that no gaps exist in sealant bead or sheathing tape. Smooth out folds and ripples occurring in sheet over sealant or in tape.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 26 00 –Vapour Retarders

Page 3 of 3

---

**3.4            DEVICE BOXES**

- .1        Seal electrical switch and outlet and controls device boxes that penetrate vapour barrier as follows:
  - .1        Install moulded box vapour barrier or wrap boxes with film sheet providing minimum 300 mm perimeter lap flange.
  - .2        Apply sealant or sheathing tape to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

**3.5            CLEANING**

Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 1 of 8

**PART 1      GENERAL****1.1      SECTION INCLUDES**

- .1      Materials and installation methods providing primary air/vapour barrier materials and assemblies.
- .2      Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

**1.2      RELATED SECTIONS**

- .1      Section 01 45 00 - Quality Control.
- .2      Section 01 61 00 - Common Product Requirements.
- .3      Section 07 92 00 - Joint Sealants.

**1.3      REFERENCES**

- .1      American Society for Testing and Materials (ASTM)
  - .1      ASTM D1505-10 Standard Test Method for Density of Plastics by the Density-Gradient Technique.
  - .2      ASTM D638-10 Standard Test Method for Tensile Properties of Plastics.
  - .3      ASTM D792-08 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
  - .4      ASTM D2240-05(2010) Standard Test Method for Rubber Property—Durometer Hardness.
  - .5      ASTM D412-06a (2013) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-19.13M, Sealing Compound, One Component, Elastomeric Chemical Curing.
  - .2      CAN/CGSB-19.18M, Sealing Compound, One Component, Silicone Base Solvent Curing.
  - .3      CAN/CGSB-19.24M, Multi-Component, Chemical Curing Sealing Compound.
  - .4      CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .3      National Building Code of Canada (NBCC)
  - .1      NBCC, Part 5 - Environmental Separation

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 2 of 8

---

**1.4 SUBMITTALS**

- .1 Submit manufacturer's product data sheets.
- .2 Submit manufacturer's installation instructions.

**1.5 QUALITY ASSURANCE**

- .1 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.
- .2 Manufacturer's Representative:
  - .1 Inspect substrate prior to commencement of work, twice during application of membrane and at commissioning to ascertain that air/vapour barrier system is installed according to membrane manufacturer's most current published specifications and details.
  - .2 Provide technical assistance to applicator and assist where required in correct installation of membrane.
  - .3 Provide certificate of quality compliance upon satisfactory completion of installation.
- .3 Maintain one copy of documents on site.

**1.6 QUALIFICATIONS**

- .1 Applicator: Company specializing in performing work of this section with minimum 5 years documented experience with installation of air/vapour barrier systems. Complete installation must be approved by the material manufacturer.
- .2 Applicator: Company who is currently licensed by certifying organization must maintain their license throughout the duration of the project.

**1.7 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical panel, 10 m<sup>2</sup> minimum, incorporating wall openings, insulation, building corner condition, illustrating materials interface and seals.
- .3 Locate where directed.
- .4 Mock-up may remain as part of the Work.
- .5 Allow 48 h for inspection of mock-up by Owner's Representative before proceeding with air/vapour barrier Work.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 3 of 8

**1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions. Deliver membrane materials in factory wrapped packaging indicating name of manufacturer and product.
- .3 Avoid spillage. Immediately notify Owner's Representative if spillage occurs and start clean up procedures.
- .4 Clean spills and leave area as it was prior to spill.
- .5 Store roll materials on end in original packaging.
- .6 Store primers at temperatures of 5 °C and above to facilitate handling. Keep solvent away from open flame and excessive heat.

**1.9 PROJECT ENVIRONMENTAL REQUIREMENTS**

- .1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.
- .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.
- .3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

**1.10 WARRANTY**

- .1 Provide a written warranty for work of this section from:
  - .1 Manufacturer for failure due to defective materials for 10 years.
  - .2 Contractor for failure due to defective installation for 10 years.
- .2 Warranty to include coverage of installed sealant and sheet materials which fail to achieve airtight and watertight seal, exhibit loss of adhesion or cohesion or do not cure.

**PART 2 PRODUCTS****2.1 SELF ADHERING SHEET MEMBRANE AIR/VAPOUR BARRIER**

- .1 Sheet air and vapour barrier for above-grade concrete and concrete block exterior wall construction. Refer to drawings and wall assemblies for locations.
  - .1 Modified bitumen, pressure / heat sensitive compound, self-adhering, nominal total thickness of 1.0 mm.
  - .2 Membrane Physical Properties

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 4 of 8

- |    |                                 |  |
|----|---------------------------------|--|
| .1 | Application                     | min 5°C                                |
| .2 | Service Temperature             | -40°C to 70°                           |
| .3 | Elongation                      | min 200%                               |
| .4 | Tensile strength                | min 3.4 Mpa                            |
| .5 | Puncture Resistance             | min 178 N                              |
| .6 | Water vapour transmission       | 2.8mg/Pa.s.m <sup>2</sup> (0.05 perms) |
| .7 | Moisture Absorption             | 0.1%                                   |
| .8 | Air Leakage at 75 Pa            | 0.02L/Sm <sup>2</sup>                  |
| .9 | Air Leakage of the 3000 Pa test | No change                              |
- .3 Acceptable products:
- |    |                                      |
|----|--------------------------------------|
| .1 | Air-Shield by W.R. Meadows of Canada |
| .2 | Blueskin SA by Bakor Inc.            |
| .3 | Soprseal Stick by Soprema.           |
| .4 | Aquabarrier AVB-36 by IKO.           |
- .2 Required primer: Include product from the same manufacturer as membrane, specifically designed to enhance the adhesion of membranes. Generally comprised of adhesive resins and volatile solvents. Brush or roll-on.

**2.2 SELF ADHERING VAPOUR PERMEABLE AIR BARRIER SHEET MEMBRANE**

- .1 Sheet vapour permeable air barrier for exterior insulated steel stud walls with fiberglass batts and polyethylene vapour retarder. Refer to drawings and wall assemblies for locations.
- |    |   |                                 |
|----|---|---------------------------------|
| .1 | Modified bitumen, pressure / heat sensitive compound, self-adhering with a nominal total thickness of 0.6 mm. |                                 |
| .2 | Membrane Physical Properties:   |                                 |
| .1 | Application   | min 5°C                         |
| .2 | Service Temperature   | -40°C to 70°                    |
| .3 | Cycling and Elongation  | Pass as per ICC-ES AC48         |
| .4 | Tensile strength  | min 182N MD / 129N CD           |
| .5 | Water vapour transmission   | 202 g/m <sup>2</sup> / 24 hours |
| .6 | Air Permeance at 75 Pa  | max 0.02 l/m <sup>2</sup>       |
- .2 Standard of acceptance:
- |    |                               |
|----|-------------------------------|
| .1 | Blueskin VP 160 by Bakor Inc. |
| .2 | Soprseal Stick VP by Soprema. |
- .3 Required primer: Include product from the same manufacturer as membrane, specifically designed to enhance the adhesion of vapour-permeable membranes on various. Generally comprised of adhesive resins and volatile solvents. Brush or roll-on.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 5 of 8

**2.3 LIQUID MEMBRANE AIR/VAPOUR BARRIER**

- .1 Single component, liquid applied, water-based, polymer-modified air barrier providing a seamless, elastomeric membrane when cured, wet film thickness 1.53 mm, cured film thickness 1.15 mm.
- .2 Include membrane reinforcement strips as recommended by manufacturer to bridge dissimilar substrates and for inside and outside corner joins underneath the liquid membrane.
- .3 For use in intake and exhaust plenums on the penthouse level. Refer to drawings.
- .4 Liquid membrane Air/Vapour physical properties:
  - .1 Application Temperature: min. 4° C
  - .2 Service Temperature: -29° C to 49° C
  - .3 Elongation: 1500%
  - .4 Tensile Strength: 0.10 MPa
  - .5 Water Vapour Permeance: 0.03 perms
  - .6 Air Leakage at 75 Pa: < 0.02 L/s/m<sup>2</sup>

**2.4 MEMBRANE FLASHING**

- .1 Membrane flashing as required to maintain air barrier continuity across dissimilar substrates or to tie into flashings.
  - .1 Same product requirements as section 2.1 above, including primer.
- .2 Schedule: Install membrane flashing at the following locations, as indicated on drawings and as necessary to provide a continuous air/vapour seal at joins in the building envelope:
  - .1 Wall to foundation join.
  - .2 Around the perimeter of all windows, doors and curtain wall sections to seal the systems to the exterior face of the wall.
  - .3 Where metal flashings overlap the self-adhered air or air barrier.
  - .4 All penetrations through the self-adhered air barrier.

**2.5 SEALANTS**

- .1 Sealants in accordance with Section 07 92 00 - Joint Sealants.
- .2 Primer for sealant: as recommended by sealant manufacturer.

**PART 3 EXECUTION****3.1 EXAMINATION**

- .1 Verify that surfaces and conditions are ready to accept the Work of this section.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 6 of 8

- .2 Ensure all surfaces are clean, dry, sound, smooth, and continuous and comply with air barrier manufacturer's requirements.
- .3 Report any unsatisfactory conditions to the Owner's Representative in writing.
- .4 Do not start work until deficiencies have been corrected.

### 3.2 PREPARATION

- .1 Remove loose or foreign matter which might impair adhesion of materials.
- .2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.
- .3 Ensure all substrates are free of surface moisture prior to application of membrane and primer.
- .4 Ensure metal closures are free of sharp edges and burrs.
- .5 Prime all substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.

### 3.3 INSTALLATION: SHEET MEMBRANE

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Use primer for all applications, regardless of manufacturer's instructions or requirements.
- .3 Over the properly prepared substrate surface apply primer with a roller and allow drying to a tacky surface. Prime only area to be covered in a working day. Reprime area not covered with membrane within 24 hours.
- .4 After primer has dried, using a hand roller firmly press the entire membrane onto the primed surface, in strict accordance with membrane manufacturer's written instructions.
- .5 Ensure complete coverage of and adhesion of all substrates to receive membrane, including wall penetrations. Co-operate with other trades to ensure continuity of membrane.
- .6 Overlap membrane 50mm and carefully smooth out with a roller to ensure full continuous bond throughout overlaps without fissures or fishmouthing.
- .7 It is important that a complete air seal be achieved. Be responsible for the completeness of membrane wherever it is not specifically detailed. Consult with Owner's Representative if there is any doubt as to the integrity of membrane, whether detailed or not.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 27 00 – Air Barriers

Page 7 of 8

- .8 In order to ensure a complete seal, seal membrane to all penetrations in an approved manner.
- .9 Apply a trowelled bead of mastic to all terminations of the membrane at the end of a day's work.
- .10 Do not enclose membrane until it has been inspected and approved by Owner's Representative. Inform Owner's Representative 48 hours prior to required inspection.
- .11 Tie-in to window frames, door frames, roofing systems and at the interface of dissimilar materials as indicated on the drawings. Refer to manufacturer's standard details.
- .12 Ensure all projections, including wall ties, are properly sealed with a trowel or caulk application of liquid sealant.

**3.4 INSTALLATION (LIQUID MEMBRANE AIR/VAPOUR BARRIER)**

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Prepare surfaces ensuring they are clean, structurally sound and smooth. Patch all cracks, small voids, irregularities and small deformities with manufacturer approved patch material.
- .3 Apply minimum 150 mm wide self-adhering air barrier strip between joints of dissimilar building materials.
- .4 Apply liquid membrane to substrate by spraying or nap roller as per manufacturer's instructions.
- .5 Ensure complete coverage of and adhesion of all substrates to receive liquid membrane, including wall penetrations. Co-operate with other trades to ensure continuity of membrane.
- .6 It is important that a complete air seal be achieved. Be responsible for the completeness of liquid membrane wherever it is not specifically detailed. Consult with Owner's Representative if there is any doubt as to the integrity of the liquid membrane, whether detailed or not.
- .7 In order to ensure a complete seal, seal liquid membrane to all penetrations in an approved manner.
- .8 Do not enclose membrane until it has been inspected and approved by Owner's Representative. Inform Owner's Representative 48 hours prior to required inspection.

**3.5 PROTECTION OF WORK**

- .1 Protect finished Work in accordance with Section 01 61 00 - Common Product Requirements.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 27 00 – Air Barriers**

**Page 8 of 8**

---

- .2 Do not permit adjacent work to damage work of this section.
- .3 Ensure finished Work is protected from climatic conditions.

**3.6 INSPECTION**

- .1 Carefully inspect for continuity of air barrier prior to placement of insulation.
- .2 Repair all deficient membrane areas.
- .3 Misaligned or inadequately lapped seams, punctures or other damage must be repaired with a patch of air barrier membrane extending 50mm in all directions from edge of damaged areas.
- .4 Cover membrane immediately after Owner's Representative's inspection to protect from damage by other trades.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 1 of 7

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 05 50 00 - Metal Fabrications.
- .2      Section 07 21 13 - Board Insulation.
- .3      Section 07 27 00 - Air Barriers.
- .4      Section 07 52 00 - Modified Bituminous Membrane Roofing.
- .5      Section 07 92 00 - Joint Sealants.
- .6      Section 08 44 13 – Glazed Aluminum Curtain Walls

**1.2      REFERENCES**

- .1      Codes and standards referenced in this section refer to the latest edition thereof.
- .2      The Aluminum Association, Inc. (AA)
  - .1      AA DAF45, Designation System for Aluminum Finishes.
- .3      American Society for Testing and Materials (ASTM)
  - .1      ASTM A653/A653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2      ASTM D523, Standard Test Method for Specular Gloss.
  - .3      ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives.
  - .4      ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- .4      Canadian Standards Association (CSA)
  - .1      CSA-S136, North American Specification for the Design of Cold-Formed Steel Structural Members.
  - .2      CSA S136.1 Commentary on North American Specification for the Design of Cold Formed Steel Structural Members.
- .5      Underwriters Laboratories of Canada (ULC).
  - .1      CAN/ULC-S134, Fire Test of Exterior Wall Assemblies.

**1.3      SCOPE OF WORK**

- .1      The composite aluminum panels in this project are limited to the parapet cap and any panel material that may be required to complete curtain wall installations at intersections. There are no large areas of wall panels.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 2 of 7

**1.4 DESIGN CRITERIA**

- .1 Design to NBC or relevant codes and CSA S136, also confirm to relevant Canadian Sheet Steel Building Institute Standards.
- .2 Design metal panel wall to provide for thermal movement of component materials caused by ambient temperature range of 80° C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
- .3 Include expansion joints to accommodate movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.
- .4 Design members to withstand dead load and wind loads calculated in accordance with NBC and applicable local regulations, to maximum allowable deflection of 1/180<sup>th</sup> of span.
- .5 Provide for positive drainage of condensation occurring within wall and soffit construction and water entering at joints to exterior face of wall in accordance with NRC “Rain Screen Principles”.
- .6 Maintain following installation tolerances:
  - .1 Maximum variation from plane or location shown on approved shop drawings: 10mm/10 m of length and up to 20 mm/100 m.
  - .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.
- .7 Design wall system to accommodate specified erection tolerances of structure.
- .8 Design wall system to allow for movement of air between exterior and interior side of metal cladding.
- .9 Provide an effective air barrier, to prevent infiltration and/or exfiltration of air through wall assembly.
- .10 Wall assembly to satisfy the criteria of CAN/ULC-S134 for flame spread distance and heat flux measurement.
  - .1 Flaming on or in the wall assembly shall not spread more than 5 metres above the opening during the test procedure.
  - .2 The heat flux during the flame exposure on the wall assembly shall not be more than 35 kW/m<sup>2</sup> measured 3.5 metres above the opening during the test procedure.

**1.5 SUBMITTALS**

- .1 Submit duplicate 300 x 300 mm samples of all system, representative of materials, finishes and colors.
- .2 Indicate dimensions and thickness of panels, fastening and anchoring methods, detail and location of joints and gaskets, thermal movement provision, wall openings, head, jamb,

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 3 of 7

sill and mullion detail, materials and finish, compliance with design criteria and requirements of related work.

- .3 Each shop drawing submitted shall bear stamp of qualified Professional Engineer registered in province of Newfoundland and Labrador.
- .4 Submit product data sheets for cladding system materials. Include product characteristics, performance criteria, limitations and colours.

## **1.6 QUALITY ASSURANCE**

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

## **1.7 QUALIFICATION**

- .1 Manufacturer: company specializing in producing composite wall panels with minimum 5 years experience with sufficient capacity to produce and deliver required units without causing delay in work.
- .2 Installer: specializing in composite wall panel installation with minimum 5 years experience approved by the manufacturer.

## **1.8 MOCK-UPS**

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Provide mock-up for evaluation of surface finishes and workmanship.
- .3 Provide initial production units for job-site assembly with other materials for review and approval.
- .4 Co-ordinate type and location of mock-ups with project requirements.
- .5 Accepted units will be used as standard for acceptance of production units.
- .6 Remove and replace units which are not accepted.
- .7 Do not proceed with remaining work until workmanship, colour, and finish are reviewed and approved Owner's Representative.
- .8 Refinish mock-up area as required to produce acceptable work.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 4 of 7

- .9 When accepted, mock-up will demonstrate minimum standard of quality required for this work.
- .10 Approved mock-up may remain as part of finished work.

## **1.9 DELIVERY, STORAGE AND HANDLING**

- .1 Store and protect material in accordance with panel manufacturer's recommendations.
- .2 Do not expose panels with strippable film to direct sunlight or extreme heat.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Composite laminated panels catalytically fused to thermo-plastic core without adhesive.
  - .1 When tested for bond integrity, in accordance with ASTM D1781 (simulating resistance to panel delamination), there shall be no adhesive failure of the bond (a) between the core and the skin nor (b) cohesive failure of the core itself below the following values.
  - .2 Bond Strength: 214 psi (Vertical Pull).
  - .3 Peel Strength: 115 N mm/mm (22.5 in lb./in.) as manufactured, 115 N mm/mm (22.5 in lb./in.) after 8 hours in water at 200°F and 115 N mm/mm (22.5 in lb./in.) after 21 days soaking in water at 70°F.
  - .4 Fire Performance: ASTM E84 - Flame Spread 0, Smoke Developed 0
- .2 Panels shall consist of two aluminum sheets 0.8 mm thick, bonded by a proprietary process to a core of Engineered Thermoplastic Resin for a total panel thickness of 4.0 mm.
- .3 Panels shall be cuts, routed and shaped to profiles and sizes as indicated on the drawings.
- .4 Finish: 70% Kynar 500 / Hylar 5000 polyvinylidene fluoride (PVDF) resins with Fluoropolymer technology, coil coated.
  - .1 Standard of acceptance:
    - .1 Colorweld 500 Series One by Reynobond.
    - .2 Larson by Alucoil North America.
  - .2 Colours to be selected from manufacturer's standard range.
  - .3 If required to complete corners at curtain wall, colour to match exterior curtain wall colour.
  - .4 Submit colour samples for final approval by Owner's Representative.
- .5 Size: 1219 mm and 1524 mm x maximum length to provide panel lengths as indicated on the drawings.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 5 of 7

- .6 Accessories:
  - .1 Hot section type stiffeners applied to the back of the panels as recommended by the manufacturer to provide support as required to meet the design criteria.
  - .2 Aluminum clip fasteners and retainers as detailed to provide a secure installation.
  - .3 “Z” or Hot Section grits to the sizes as detailed and as required to meet the design criteria.
  - .4 Screws: stainless steel to CSA B35.3.
  - .5 Sealants:
    - .1 In accordance with Section 07 92 00 – Joint Sealants; colour as selected by the Owner’s Representative.
    - .2 Refer to drawings and Section 07 52 00 - Modified Bituminous Membrane Roofing for sealant membrane required on furring attached to parapet wall.
  - .6 Touch up paint: as recommended by the manufacturer.
  - .7 Isolation coating: as recommended by manufacturer.

## **2.2 FABRICATION**

- .1 Fabricate panels for installation which will have a consistent joint width in the range of 12 - 19 mm and a depth of 25 mm.
- .2 Fabricate panels for progressive installation techniques using concealed fasteners and recessed continuous splines.
- .3 Provide adequate stiffening to prevent wind induced vibrations, uplift or fatigue problems.
- .4 Fabricate all work with straight lines, square corners, or smooth bends, free from twists or warps, kinks, dents, and other imperfections which may affect appearance or serviceability.
- .5 Limit panel deviation from flatness in all directions across the surface to a maximum of 0.2%.
- .6 Construct system to have flush appearance from the exterior with no surface fittings or other irregularities and with no reveal other than the module joint width.
- .7 Align panels with no lap or reveal other than joint width to permit expansion and contractions.
- .8 Thickness of metal and details of assembly and support shall provide sufficient strength and stiffness to resist distortion of finished surfaces. Exposed edges and ends of metal shall be dressed smooth, free from sharp edges. Connections and joints exposed to the weather shall be constructed to exclude water.
- .9 Fabricate panels with side panels having a minimum depth of 25 mm on all sides.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 42 43 – Composite Aluminum Wall Panels

Page 6 of 7

- .10 Form panels with a uniform radius corners to 1.5 times the material thickness. Panel corners to be factory notched and neatly butted. Provisions shall be made for individual panel drainage at panel base.
- .11 Fasteners: Stainless steel construction, concealed at all locations, and of a sufficient quantity of proper size for fastening of the work.
- .12 Flashings: Wherever practical, install no flashing at corners, jambs, and abutments. Panel design to include for these connections.

**PART 3      EXECUTION**

**3.1      MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.2      PREPARATION**

- .1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.

**3.3      INSTALLATION**

- .1 Install composite panels in accordance with manufacturer's written instructions and shop drawings. Allow for thermal movement.
- .2 Install sub-girts to structural wall supports, using self-tapping screws or powder actuated fasteners as required.
- .3 Install insulation using adhesive to ensure continuous thermal barrier in conjunction with air/vapour barrier as required by Section 07 27 00 – Air Barriers.
- .4 Install composite panels to internal sub-girts with concealed fasteners and clips as detailed.
- .5 Provide notched and formed top closures, sealed to arrest direct weather penetration at vertical profiles for exterior siding. Ensure continuity of "pressure equalization" of rain screen principle.
- .6 Provide alignment bars, brackets, clips inserts, shims as required to securely and permanently fasten wall system to building structure.
- .7 Install flashings to divert all moisture to the exterior.
- .8 Caulk as required by Section 07 92 00 – Joint Sealants.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 42 43 – Composite Aluminum Wall Panels

Page 7 of 7

---

**3.4 FIELD QUALITY CONTROL**

- .1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its product, and submit written reports in acceptable format to verify compliance of Work with Contract.
- .2 Manufacturer's field services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits to review Work at stages listed:
  - .1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.
  - .2 Twice during progress of Work.
  - .3 Upon completion of Work, after cleaning is carried out.
- .4 Obtain reports within three days of review and submit.

**3.5 CLEANING**

- .1 Remove protective covering from panels.
- .2 Wash down exposed exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths. Wipe interior surfaces clean as part of final clean-up.
- .3 Remove excess sealant with recommended solvent.
- .4 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 46 13 – Preformed Metal Siding

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 – Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 06 10 00 - Rough Carpentry.
- .4      Section 07 62 00 – Sheet Metal Flashing and Trim.
- .5      Section 07 92 00 - Joint Sealants.

**1.2            REFERENCES**

- .1      American Society of Mechanical Engineers (ASME)
  - .1      ASME B18.6.3, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series).
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-93.4, Galvanized and Aluminum-Zinc Alloy Coated Steel Siding Soffits and Fascia, Prefinished, Residential.
- .3      Canadian Standards Association (CSA)
  - .1      CSA B111, Wire Nails, Spikes and Staples.

**1.3            SUBMITTALS**

- .1      Product data: submit manufacturer's printed product literature, specifications and data sheet.
  - .1      Submit two copies of WHMIS MSDS - Material Safety Data. Indicate VOC's for caulking materials during application and curing.
- .2      Submit 300 x 300 mm sample of siding material of colour and profile specified.
- .3      Shop drawings to indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, metal furring, and related work.
- .4      Submit manufacturer's installation instructions.

**1.4            WARRANTY**

- .1      Provide a written guarantee, signed and issued in the name of the owner, covering the metal cladding/siding material for 10 years and workmanship for a period of 2 years from the date of Substantial Completion.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 46 13 – Preformed Metal Siding

Page 2 of 3

- .2 Areas which prove to be defective in any way shall be repaired or replaced and any damage to other work as a result of such defects shall be repaired at no cost to the Owner.

**PART 2      PRODUCTS**

**2.1      STEEL CLADDING AND COMPONENTS**

- .1 Interior plenum cladding: to CGSB 93.4, Class plain
- .1      Finish coating: silicone modified polyester (SMP) topcoat system.
- .2      Colour: colour selected by Owner's Representative.
- .1      Black, grey or similar dark colour is required.
- .3      Thickness: 0.46 mm base metal thickness.
- .2      Profile: liner panel type flat sheet V-crimped for stiffness.

**2.2      ACCESSORIES**

- .1 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, colour and gloss as cladding.

**2.3      FASTENERS**

- .1 All exposed fasteners colour matched to siding.
- .2 Screws to ASME B18.6.3. Purpose made aluminum alloy stainless steel.

**2.4      CAULKING**

- .1 Sealants: Section 07 92 00 – Joint Sealants.

**PART 3      EXECUTION**

**3.1      INSTALLATION**

- .1 Install cladding in accordance with CGSB 93.5, and manufacturer's written instructions
- .2 Install continuous starter strips, inside and outside corners, edgings, soffit, drip, cap, sill and louver/window/door opening flashings as indicated.
- .3 Install outside corners, fillers and closure strips with carefully formed and profiled work.
- .4 Use square-edged but joints between trims at corners and intersections in the same plane. Do not mitre corners where trims intersect in the same plane.
- .5 Install soffit and fascia cladding as indicated.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 46 13 – Preformed Metal Siding**

**Page 3 of 3**

---

- .6 All joints in exterior cladding to be plumb, level, true to line, tight fitting, hairline joints.
- .7 Attach components in manner not restricting thermal movement.
- .8 Caulk junctions with adjoining work with sealant. Do work in accordance with Section 07 92 00 - Joint Sealants.
- .9 Apply touch-up paint to any scratches or surface blemishes. Larger scratches or blemishes will require replacement of affected panel or trim.

**3.2 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 46 23 – Wood Siding

Page 1 of 4

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 74 21 – Construction Waste Management and Disposal.
- .2      Section 06 10 00 – Rough Carpentry.
- .3      Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4      Section 07 92 00 - Joint Sealants.
- .5      Section 09 91 13 – Exterior Painting.

**1.2            REFERENCES**

- .1      Canadian Standards Association (CSA)
  - .1      CSA B111, Wire Nails, Spikes and Staples.
- .2      NLGA Standard Grading Rules for Canadian Lumber.
- .3      West Coast Lumber Inspection Bureau (WCLIB)
- .4      Western Wood Products Association (WWPA)
- .5      Pacific Lumber Inspection Bureau (PLIB)

**1.3            SUBMITTALS**

- .1      Product Data:
  - .1      Submit manufacturer's printed product literature, specifications and data sheet.
  - .2      Submit copies of WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's for caulking materials during application and curing.
- .2      Submit duplicate 300 x 300 mm size profile specified.
- .3      Submit manufacturer's installation instructions.

**1.4            DELIVERY, STORAGE AND HANDLING**

- .1      Deliver, handle, store and protect materials in accordance with Section 01 61 00 – Common Product Requirements.
- .2      Deliver siding and trim boards suitable packaged to avoid damage to exposed surfaces.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 46 23 – Wood Siding

Page 2 of 4

- .3 Store in an unheated structure or under cover until application. Siding may be temporarily stored outside if at least 4 inches off the ground and on a flat, well drained surface protected from moisture with a shed pack or waterproof cover.

## **1.5 QUALITY ASSURANCE**

- .1 Provide Certificate of Quality Compliance from siding manufacturer upon completion of fabrication.
- .2 Provide Certificate of Quality Compliance upon satisfactory completion of installation.

## **PART 2 PRODUCTS**

### **2.1 CEDAR SIDING**

- .1 Western Red Cedar, kiln-dried, select knotty or better, knots are sound and tight.
  - .1 Dressed, V-joint on one side,
  - .2 Tongue and groove,
  - .3 19 mm x 140 mm,
  - .4 Finish: leave cedar siding unfinished.
- .2 Strapping:
  - .1 Same material as siding except:
    - .1 38 mm thickness x minimum of 89 mm wide.
- .3 Fasteners:
  - .1 Cedar siding: stainless steel nails, 50 mm long.
  - .2 Trim boards: stainless steel exterior grade trim/deck screws 50 mm.
  - .3 Strapping: stainless steel exterior grade screws, self-tapping and of sufficient length to adequately penetrate L-girts.

### **2.2 ACCESSORIES**

- .1 Steel girts:
  - .1 64 mm L-girts profile, refer to drawings for locations.
  - .1 Minimum 1.2 mm (18 ga.) base thickness steel, commercial grade to ASTM A653 with Z-275 zinc coating, designed to accommodate design criteria.
- .2 Thermal isolation girt clips:
  - .1 Z-275 galvanized steel with a factory-applied thermal spacer located between the metal clip and the substrate it will be attached to in the field.
  - .2 Clip to be structurally sound and able to meet all performance requirements of the wall system design, including dead load and impact loads.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 46 23 – Wood Siding

Page 3 of 4

- .2 Clip to be capable of providing adjustability of sub-girt attachment to accommodate minor wall sheathing or structural misalignment.
- .3 Contractor to determine clip size based on offset from wall sheathing to furring channel (outside face of L-girt). It is anticipated that 50 mm is required.
- .3 Standard of acceptance:
  - .1 ISO Clip by Northern Facades Ltd.
- .3 Insect screen: black nylon square-mesh, 18 x 14 count.
- .4 Sealant: to Section 07 92 00 - Joint Sealants.
- .5 Flashings: to Section 07 62 00 – Sheet Metal Flashing and Trim.

**PART 3      EXECUTION**

**3.1      EXAMINATION**

- .1 Verify that substrate surfaces and wall openings are ready to receive work.

**3.2      INSTALLATION**

- .1 Install metal flashing continuous over window and other openings. Secure in position tight to wall sheathing.
- .2 Install sheathing membrane as per manufacturer's instructions and as per Section 07 27 00 Air Barriers.
- .3 Install screen at bottom of base trim, under insulation and strapping.
- .4 Install board insulation as per manufacturer's instructions and as per Section 07 21 13.
- .5 Install strapping spaced as indicated on drawings and at edges and around all openings as required.
- .6 Install all trims prior as required by drawings prior to installing siding.
- .7 Install siding for natural watershed in straight, aligned lengths, set level with plumb ends and corners.
- .8 Fasten siding securely to vertical strapping substrate.
- .9 Siding board end-joints to be no less than 800 mm apart in consecutive courses. Distribute evenly over wall surface.
- .10 Face nail 25 mm from bottom of siding board directly into wood strapping, drive nail head flush with siding surface.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 46 23 – Wood Siding

Page 4 of 4

---

- .11 Screw trim boards directly into wood strapping, countersink head and cover with caulking/sealant.
- .12 Apply sealant at all siding terminations including around window, door and other opening frames.

**3.3 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 1 of 13

**PART 1      GENERAL**

**1.1            RELATED WORK**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 35 43 - Environmental Procedures.
- .3      Section 01 45 00 - Quality Control.
- .4      Section 01 61 00 - Common Product Requirements.
- .5      Section 01 74 11 - Cleaning.
- .6      Section 01 74 21 – Construction /Demolition Waste Management and Disposal.
- .7      Section 01 78 00 - Closeout Submittals.
- .8      Section 05 31 00 - Steel Decking.
- .9      Section 06 10 00 - Rough Carpentry.
- .10     Section 07 42 43 – Composite Aluminum Wall Panels (for parapet cap)
- .11     Section 07 62 00 - Sheet Metal Flashing and Trim.
- .12     Section 07 92 00 - Joint Sealants.

**1.2            REFERENCES**

- .1      American Society for Testing and Materials (ASTM)
  - .1      ASTM C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
  - .2      ASTM C 1177/C1177M, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .3      ASTM E 108, Standard Test Methods for Fire Tests of Roof Coverings.
- .2      Canadian General Standards Board (CGSB).
  - .1      CAN/CGSB-37.29, Rubber- Asphalt Sealing Compound.
  - .2      CGSB 37-GP-56M Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .3      Canadian Roofing Contractor's Association (CRCA)
  - .1      CRCA Specification Manual.
- .4      Canadian Standards Association (CSA)

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 2 of 13

- .1 A123.21 - Standard test method for the dynamic wind uplift resistance of membrane roofing systems (latest version).
- .5 Factory Mutual Engineering Corp.
  - .1 Approval Standard 4470 (RoofNav Database)
  - .2 Property Loss Prevention Data Sheet (PLPDS):
    - .1 1-28 Wind Design (2021)
    - .2 1-29 Roof Deck Securement and Above-Deck Roof Components (2021)
- .6 Underwriters Laboratories' of Canada (ULC)
  - .1 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .2 CAN/ULC-S702.2, Standard for Mineral Fibre Thermal Insulation for Buildings.
  - .3 CAN/ULC-S704, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
  - .4 UL 1897 Standard for Safety for Uplift Tests for Roof Covering Systems.

**1.3 SUBMITTALS**

- .1 Submit manufacturer's printed product literature, specifications and data sheets for all products to be using in roofing systems.
- .2 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Indicate in shop drawings all flashings, control joints, tapered insulation details, roof drains and all required roofing materials.
  - .2 Provide layout for tapered insulation.
  - .3 Provide fastening patterns for roofing systems, including adhesive.
- .3 Submit a letter stating that the roofing contractor is recognized and approved by the roofing materials manufacturer and that the manufacturer is prepared to issue the warranty.
- .4 Submit written declaration to Owner's Representative that materials and components as assembled in roofing system are compatible.
- .5 Refer to Quality Assurance and Performance Criteria for further submittal requirements.

**1.4 QUALITY ASSURANCE**

- .1 Membrane: applied by applicator acceptable to Owner's Representative and approved by manufacturer for application of its products.
- .2 Applicators: minimum 5 years proven experience.
- .3 Manufacturer's representative:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 3 of 13

- .1 Inspect roofing system at the start of construction, midway and as required for commissioning. Additional inspections may be carried out at the discretion of the Roofing System Manufacturer.
- .2 Provide technical assistance where required to correct installation of roofing system.
- .4 Refer to Section 01 33 00 – Submittal Procedures and Section 01 45 00 - Quality Control for submission procedures.

## **1.5 WARRANTY**

- .1 Provide a written guarantee signed and issued in the name of The Owner by the Roofing System Manufacturer stating that roofing membrane is free from manufacturing defects and that the complete system will stay in place and remain leak proof for a period of ten (10) years from date of Substantial Certificate of Completion, subject to the standard limitations and conditions of the manufacturer.
- .2 Provide a written guarantee, signed and issued in the name of the Owner by the Contractor, stating that the roofing application has been performed in compliance with the plans and specifications, and for two (2) years from the date of Substantial Certificate of Completion, the Contractor shall repair, at no expense to the Owner, any defects which result of a failure to comply with the plans and specifications.
- .3 Defective work shall include, but not limited to: leaking, wind uplift, delamination of roofing materials, reduction of thermal value due to moisture in insulation, crazing and ridging.
- .4 Warranty to be non-prorated.

## **1.6 MOCK-UP**

- .1 If requested construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Mock-up to be 10 m<sup>2</sup> minimum size showing typical membrane lap joint, one inside and one outside corner parapet flashing. Insulation and fastening method, air/vapour barrier lap, gypsum board and fastening method and workmanship.
- .3 Mock-up will be reviewed by the Owner's Representative during the next scheduled site visit. Mock-up must be inspected before proceeding with roofing work.
- .4 Accepted mock-up may form part of completed work.

## **1.7 FIRE PROTECTION**

- .1 Fire Extinguishers: maintain one stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled for A, B and C class protection. Size 9 kg on roof per torch applicator, within 10 m of torch applicator.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 4 of 13

- .2 Contractor to provide safety person on site at all times during the roofing process and shall remain on site two (2) hours after work has ceased or after torching has stopped. Safety person shall scan the perimeter and roof penetration details with a handheld infrared gun.

## **1.8 STORAGE AND HANDLING**

- .1 Refer to Section 01 61 00 - Common Product Requirements for storage and handling requirements.
- .2 Store materials off-ground in weatherproof storage.
- .3 Store materials in an upright position. Store membrane rolls with selvage edge up, store as per manufacturer's requirements to meet warranty.
- .4 Remove only in quantities required for same day use.
- .5 Place plywood runways over work to protect work and enable workflow.
- .6 Store sealants at +5°C minimum.
- .7 Store insulation protected from daylight, weather and deleterious materials.
- .8 All materials to be delivered and stored in conformance with the requirements described by the manufacturer; remain in their original packaging, displaying the manufacturer's name, product name, weight, and reference standards, as well as all other indications or references considered standard.
- .9 At all times, protect and store materials in a dry and properly ventilated area, away from any welding flame or spark and sheltered from the elements or any harmful substance. Only materials destined for same-day use can be removed from this storage area. In cold weather, store materials in a heated area at a minimum temperature of 10°C and remove them prior to application. If rolls cannot be stored in a heated environment, they may be pre-conditioned before installation. Consult manufacturer's membrane application procedures.
- .10 Store adhesives and emulsion-based waterproofing mastics at a minimum of 5°C. Store adhesives and solvent-based mastics at sufficiently high temperatures to ensure ease of application.
- .11 Avoid material overloads which may affect the structural integrity of specific roof areas.

## **1.9 ENVIRONMENTAL REQUIREMENTS**

- .1 Do not install roofing when the temperature remains below manufacturer's recommended minimum application temperature.
- .2 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 5 of 13

**1.10 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**PART 2 PRODUCTS****2.1 PERFORMANCE CRITERIA**

- .1 Compatibility between components of the roofing system is essential. Provide written declaration to Owner's Representative that materials and components as assembled in roofing system are compatible.
- .2 Roofing system: to CSA A123.21 for wind uplift resistance.
- .3 Refer to structural drawings for climatic data (hourly wind pressure and importance factor). Calculate wind uplift force using applicable coefficients as outlined in NBCC 4.1.7.
- .4 The portion of the roof system over metal deck that is exposed to the pool open area must be fully adhered with no mechanical fasteners. This area is approximately bounded by grids 1.3, JX, 7, and H. Mechanical fasteners may be used in the remaining areas.

**2.2 THERMAL BARRIER**

- .1 Pre-primed fiberglass mat faced gypsum panel to ASTM C1177.
  - .1 Thickness: 12.7 mm.
  - .2 Weight: 2.0 lb/sq. ft.
  - .3 Surfacing: Primed Fiberglass Mat.
  - .4 Properties:
    - .1 Flexural Strength, Parallel (ASTM C473): 80 lbf, minimum.
    - .2 Maximum deck flute span (ASTM E661): 127 mm
    - .3 R-Value (ASTM C518): 0.56.
    - .4 Water Absorption (ASTM C473): Less than 5% weight.
    - .5 Surface Water Absorption (ASTM C473): Nominal 1.0 grams.
    - .6 Compressive Strength (Applicable Sections of ASTM C472): Nominal 900 pounds per square inch.
    - .7 Fire resistance rating (UL 790 and ASTM E108): Class A
    - .8 Mold Resistance (ASTM D3273): Scored a 10
  - .5 Standard of acceptance: DensDeck Prime by Georgia-Pacific.

**2.3 AIR/VAPOUR BARRIER**

- .1 Torch-applied vapour barrier membrane composed of Styrene-Butadiene-Styrene (SBS) modified bitumen with glass- mat reinforcement. Top surface to be anti-slip, underface to be thermofusible film.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 6 of 13

- .1 Install with manufacturer's recommended primer in all instances.
- .2 Thickness: minimum 2.2 mm
- .3 Weight: 2.7 kg/m<sup>2</sup>
- .4 Selvedge width: 75 mm.
- .5 Properties:
  - .1 Per CSA A123.23-15: Type A, Grade 3
    - .1 Strain energy at 23°C MD/XD: 0.5/0.45 kN/m before heating, 0.4/0.3 kN/m after heating,
    - .2 Elongation at peak load, at 23°C MD/XD: 4%/3% before heating, 4%/4% before heating
    - .3 Low temperature flexibility: -18°C
  - .2 Water vapour permeance per ASTM E96: < 2.5 ng/Pa.s.m<sup>2</sup> (<0.04 perm).
- .6 Standard of acceptance: Elastophene SP 2.2 membrane with Elastocol 500 primer.

## 2.4 INSULATION

- .1 Polyisocyanurate to CAN/ULC-S704, with glass reinforced felt facers, square edged and containing no CFCs or HCFCs.
  - .1 RSI 1.14 per 25 mm.
  - .2 Thickness as noted and as required to achieve R/RSI value indicated on drawings. A layer of uniform thickness is noted on drawings and is covered by a layer of tapered. Layers can be combined in a single thickness to achieve the required average R/RSI value.
  - .3 Tapered in pattern as indicated on drawings.

## 2.5 PROTECTION BOARD AND BASE SHEET COMPONENTS

- .1 Combined protection board and base sheet:
  - .1 High-performance base sheet panel composed of SBS modified bitumen membrane with a non-woven polyester reinforcement and a surface covered with a thermofusible plastic film. Membrane to be factory-laminated on an asphaltic board support panel.
  - .2 Characteristics:
    - .1 Membrane thickness: 2.2. mm
    - .2 Support panel thickness: 4.8 mm
    - .3 Total thickness: 7 mm
    - .4 Total weight: 8.6 kg/m<sup>2</sup>
    - .5 Selvedge width: 90 mm
    - .6 Membrane properties per CSA A123.23-15, Type B, Grade 3:
      - .1 Strain energy, minimum MD/XD after heat conditioning: 5.5/5.5 kN/m @ 23°C; 3.1/3.1 kN/m @ -18°C.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 7 of 13

- .2 Ultimate elongation @ 23°C, MD/XD after heat conditioning: 45/45%.
- .7 Puncture resistance per ASTM E154: 500 N.
- .8 Water absorption per ASTM D994: 2.5%.
- .9 Standard of acceptance: 2-1 Soprasmart Board (Soprasmart Board 180).

**2.6****CAP SHEET**

- .1 Regular Cap Sheet: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, non-woven polyester reinforcement weighing 250 g/m<sup>2</sup>.
  - .1 Type 1, fully adhered.
  - .2 Class A-granule surfaced.
  - .3 Grade: heavy duty service.
  - .4 Thickness: 4.0 mm.
  - .5 Weight: 4.8 kg/m<sup>2</sup>
  - .6 Bottom surface thermofusible plastic film.
  - .7 Colours:
    - .1 New roof main areas: Light grey.
    - .2 New roof perimeter warning strip: Red.
    - .3 Tie-ins to existing roof or new sections on sloped roof area: brown to match existing colour.
  - .8 Membrane properties per CSA A123.23-15, Type B, Grade 1:
    - .1 Strain energy, MD/XD after heat conditioning: 7.5/6.0 kN/m @ 23°C; 7.0/5.5 kN/m @ -18°C.
    - .2 Ultimate elongation MD/XD @ 23°C, MD/XD after heat conditioning: 45/60%.
    - .3 Low temperature flexibility, max MD/XD: -18°C.
    - .4 Dimensional Stability, max. MD/XD: ±0.2 /± 0.2%
    - .5 Resistance to puncture: pass.
    - .6 Granule embedment: pass.
  - .9 Standard of acceptance: Sopralene Flam 250 GR.
- .2 For plenum floor only: cap sheet to be heavy-weight membrane 5 mm thick or greater specifically designed for high-traffic roof areas.
- .3 Cap sheet and base sheet to be from same manufacturer.

**2.7****BASE SHEET FLASHING**

- .1 To CGSB 37-GP-56M, Type 2, Class C, Grade 2, non-woven polyester reinforced 180g/m<sup>2</sup>, self-adhesive membrane with polyethylene top face and release film under face.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 8 of 13

**2.8 ADHESIVE**

- .1 Low-rise, two-component polyurethane adhesive specifically design for roofing applications to adhere layers of glass matt gypsum board panels, polyisocyanurate insulation boards and asphaltic cover boards to each other and to the surface of steel roof decks and self-adhered vapour barrier products.
- .2 Adhesive must be compatible with all products included in the roof assembly.
- .3 Quantity and application pattern of adhesive to suit the building location and meet the requirements of the Wind Uplift Resistance Testing reports according to CSA A123.21-14 or publications according to FM 4470 (RoofNav Database), including recommendations for corners and perimeters listed in the FM PLPDS 1-28 and 1-29.
- .4 Material properties:
  - .1 Viscosity, Brookfield @ 25°C per ASTM D 2556: Part A 1,800 cP, Part B 2,800 cP.
  - .2 Cream time: 15 seconds
  - .3 Rise time: Approximately 2 minutes
  - .4 Curing time: 15 minutes.
- .2 Standard of acceptance: Soprema Duotack.

**2.9 FASTENERS**

- .1 Minimum #14 mechanical fasteners made of case-hardened carbon steel with corrosion resistance coating, complying with FM standards.
  - .1 Lengths as required to suit total assembly thickness. Ensure fasteners have the following deck penetration:
    - .1 For metal decks: minimum 19 mm and maximum 25 mm longer than assembly being secured. Fasteners to engage metal deck top flange.
  - .2 Include 75 mm diameter round or hexagon stress plates complying with CSA B35.3 and FM 4470 approval standards.
  - .3 Quantity and application pattern of fasteners to suit the building location and meet the requirements of the Wind Uplift Resistance Testing reports according to CSA A123.21-14 or publications according to FM 4470 (RoofNav Database), including recommendations for corners and perimeters listed in the FM PLPDS 1-28 and 1-29.

**2.10 SEALERS**

- .1 Mastic made of synthetic rubbers, plasticized with bitumen and solvents with aluminum pigments to provide greater resistance to U.V.

**2.11 PRIMERS**

- .1 For self-adhesive membranes: A blend of elastomeric bitumen, volatile solvents and adhesive enhancing resins used to prime porous and non-porous substrates such as

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 9 of 13

gypsum board, wood, concrete or metal to enhance the adhesion of self-adhesive membranes at temperatures above -10°C.

- .1 Product as recommended by manufacturer of membrane requiring primer.
- .2 For heat welded membranes: A blend of elastomeric bitumen, volatile solvents and adhesive enhancing additives used to prime concrete or metal substrates to enhance the adhesion of torch-applied membranes.

## **2.12 LIQUID MEMBRANE FLASHING (COATING)**

- .1 Fibrated roof coating for application over metal framing and fasteners required to support the composite aluminum parapet cap. Referred to as "liquid flashing membrane" on architectural details.
- .2 Fibrated roof coating comprised of bitumen, cellulose fibers, mineral fillers and solvent. Suitable for application over roof membranes and metal components. Applied by brush or roller.
- .3 Material properties:
  - .1 Solids by weight: 85%
  - .2 Specific gravity at 20°C: 1.02 kg/l
  - .3 Service temperature range: up to 80°C
  - .4 Application temperature range:
    - .1 Product: 10 to 35°C
    - .2 Surface: -5 to 35°C
  - .5 Drying time: 1 to 8 hours, depending on temperature.
- .4 Standard of acceptance: Sopralastic 121.

## **2.13 ROOF DRAINS**

- .1 As per section 22 05 15 – Plumbing Specialties and Accessories.

## **2.14 PENETRATION FLASHINGS**

- .1 Liquid tight flexible conduit / tech cable flashing:
  - .1 Goose neck shaped flashing pipe sleeve with integral flange for flexible conduit up to 100 mm in diameter.
  - .2 305 mm high; 6061-T4 aluminum with mill finish with EPDM end cap seal and base seal sized to suit flexible conduit.
  - .3 Acceptable product: Model MEF-2A1 by Thaler.
- .2 Rigid conduit flashing:
  - .1 1.6 mm mill finish 1100-0T alloy aluminum, one piece flashing sleeve with integral deck flange and pre-moulded urethane insulation liner, EPDM triple pressure grommet seal and base seal; 305 mm high.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 10 of 13

- .2 Complete with flashing and screw fastened removable cap.
- .3 Bituminous painted deck flange.
- .4 Acceptable product: Model MEF-AE1 by Thaler.
- .3 Stack Jack Flashings:
  - .1 1.6 mm mill finish 1100-0T alloy aluminum, one piece flashing sleeve with integral deck flange and pre-moulded urethane insulation liner, EPDM triple pressure grommet seal and base seal; 483 mm high.
  - .2 Bituminous painted deck flange.
  - .3 Sized to exactly fit pipe diameter.
  - .4 Acceptable product: Model SJ-39 by Thaler.
- .4 Manufactured Pitch Pocket System:
  - .1 Part 1: Round, straight or square 50 mm high solid polyester curb sections sized and combined as necessary to suit HSS dimensions.
  - .2 Part 2: Polyether adhesive/sealant to adhere curb sections to roof and seal critical areas around the penetration.
  - .3 Part 3: Single-component pourable self-leveling elastomer sealant to fill pitch pocket once it is secured in place and sealed as per part 2.
  - .4 Standard of acceptance: Sopramastic Block, PF and SP2.

**PART 3      EXECUTION**

**3.1            WORKMANSHIP**

- .1 Do roofing work in accordance with applicable, standard in Canadian Roofing Contractors Association (CRCA) Roofing Specifications Manual
- .2 Roofing work must be completed in a continuous fashion as surfaces are ready and weather conditions permit.
- .3 Seal all seams that are not covered by a cap sheet membrane in the same day. The cap sheet cannot be installed if any moisture is present at/in the base sheet seams.
- .4 Ensure waterproofing conditions for roofs at all times, including protection during installation work by other trades and progressive protection as work is completed (e.g. vents, drains, etc.).
- .5 Complete all work (temporary supports for equipment and bases, disconnection and connection of equipment as needed, moving and lifting of bases, etc.) required for waterproofing beneath equipment and bases as shown on drawings; use qualified trade persons as required. Temporary supports for waterproofing beneath air-conditioning units where present must be designed to hold supported loads and distribute these loads to avoid structural damage.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 11 of 13

**3.2 PROTECTION**

- .1 Cover walls and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rainwater off roof and away from face of building until roof drains or hoppers installed and connected. Refer to Section 01 35 43 - Environmental Procedures for site drainage requirements.
- .5 Protect roof from traffic and damage.
- .6 At the end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage.
- .7 Install insulation promptly to avoid the possibility of condensation beneath vapour retarder.
- .8 Take necessary measures ensuring no penetration of the elements will occur to the building after commencement of work, including but not limited to water.

**3.3 EXAMINATION: ROOF DECKS**

- .1 Examine roof decks and immediately inform of Owner's Representative in writing of defects.
- .2 Prior to commencement of work ensure:
  - .1 Decks are firm, straight, smooth, dry, and free of snow, ice or frost, and swept clean of dust and debris.
  - .2 Curbs have been built. Coordinate height of roof curbs with Section 06 10 00 – Rough Carpentry.
  - .3 Roof drains have been installed at proper elevations relative to the finished roof surface.
  - .4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install roofing materials during rain or snowfall.

**3.4 EXPOSED MEMBRANE ROOFING APPLICATION**

- .1 Install all proprietary components forming part of the roofing system as per the manufacturer's written instructions and any direction received by the manufacturer's representative to suit the performance requirements of the system for the location of the building.
- .2 Thermal Barrier and Air/Vapour Barrier:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 12 of 13

- .1 Place thermal barrier with long axis of each sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.
  - .2 Secure thermal barrier to metal deck with mechanical fasteners or adhesive (in specified locations) as required to resist wind uplift for the building location as specified. Follow manufacturer's instructions for adhesive products.
  - .3 Fit butt edge joints in firm contact with one another.
  - .4 Prime all surfaces of thermal barrier to receive torch-applied modified bituminous sheet vapour barrier as per manufacturer's instructions. Apply sheet vapour barrier to thermal barrier in an overlapping shingle fashion. Stagger all joints perpendicular to coursing.
  - .5 Ensure minimum 90 mm overlap at all ends and side laps. Ensure membrane has full contact with thermal barrier surface.
- .3 Insulation:
- .1 Secure insulation to air/vapour barrier with mechanical fasteners or adhesive (in specified locations) as required to resist wind uplift for the building location as specified. Follow manufacturer's instructions for adhesive products.
  - .2 Place boards in parallel rows with ends staggered, and in firm contact with one another.
  - .3 Install tapered insulation in accordance with shop drawings.
- .4 Base Sheet and Cover Board Components:
- .1 Secure cover board to insulation with mechanical fasteners or adhesive (in specified locations) as required to resist wind uplift for the building location as specified. Follow manufacturer's instructions for adhesive products.
  - .2 Place boards in parallel rows with ends staggered and in firm contact with one another.
- .5 Cap Sheet Application:
- .1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
  - .2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
  - .3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.
  - .4 Application to be free of blisters, fishmouths and wrinkles.
  - .5 Do membrane application in accordance with manufacturer's recommendations.
- .6 Flashings:
- .1 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
  - .2 Torch, base and cap sheet onto substrate in 1-metre-wide strips.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 52 00 - Modified Bituminous Membrane Roofing

Page 13 of 13

- .3 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by torch welding.
- .4 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
- .5 Provide 75 mm minimum side lap and seal.
- .6 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.
- .7 Do work in accordance with manufacturer's recommendations.
- .7 Roof penetrations:
  - .1 Install roof drains, vent stack covers and other roof penetration flashings and seal to membrane in accordance with the manufacturer's recommendations, instructions and typical details.
  - .2 Install pitch pocket system at HSS steel penetrating roof assembly as detailed on drawings and seal to membrane in accordance with the manufacturer's recommendations and details.

### **3.5 CLEANING**

- .1 Perform in accordance with Section 01 74 11 - Cleaning.
- .2 Check drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from site.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 62 00 – Sheet Metal Flashing and Trim

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 06 10 00 – Rough Carpentry.
- .4      Section 07 42 43 – Composite Aluminum Wall Panels.
- .5      Section 07 46 13 – Preformed Metal Siding.
- .6      Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .7      Section 07 92 00 – Joint Sealants.

**1.2            REFERENCES**

- .1      The Aluminum Association Inc. (AA)
  - .1      Aluminum Sheet Metal Work in Building Construction.
  - .2      AA DAF45, Designation System for Aluminum Finishes.
- .2      American Society for Testing and Materials (ASTM International)
  - .1      ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2      ASTM A792/A792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .3      ASTM D523, Standard Test Method for Specular Gloss.
  - .4      ASTM D822, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .3      Canadian Roofing Contractors Association (CRCA)
  - .1      Roofing Specifications Manual.
- .4      Canadian Standards Association (CSA International)
  - .1      CSA A123.3, Asphalt Saturated Organic Roofing Felt.
  - .2      CSA B111, Wire Nails, Spikes and Staples.

**1.3            SAMPLES**

- .1      Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 62 00 – Sheet Metal Flashing and Trim

Page 2 of 3

**PART 2      PRODUCTS****2.1      PREFINISHED STEEL SHEET**

- .1 Aluminum-zinc alloy coated steel sheet: to ASTM A792/A792M, commercial quality, grade 33 with AZ150 coating, regular spangle surface.
  - .1 Typical: 0.76 mm (22 ga.) base metal thickness.
  - .2 Special cases as noted on drawings: 1.214 mm (18 ga.) base metal thickness.
- .2 Prefinished sheet with factory applied polyvinylidene fluoride.
  - .1 Class F1S
  - .2 Colour as selected by Owner's Representative from manufacturer's standard range:
    - .1 To match black finish on curtain wall and composite aluminum parapet cap.
    - .2 Ensure both sides of flashing sheet are painted if exposed to view.
  - .3 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.
  - .4 Coating thickness: not less than 22 micrometres.
  - .5 Resistance to accelerated weathering for caulk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:
    - .1 Outdoor exposure period 2500 hours.
    - .2 Humidity resistance exposure period 5000 hours.

**2.2      ACCESSORIES**

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3.
- .4 Sealants: Section 07 92 00 – Joint Sealants.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .6 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application. Corrosion resistance of fastener is to be the same as, or better than, the cladding or flashing material.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .8 Touch-up paint: as recommended by prefinished material manufacturer.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 62 00 – Sheet Metal Flashing and Trim**

**Page 3 of 3**

---

**2.3 FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details as indicated.
- .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with Aluminum Association Aluminum Sheet Metal Work in Building Construction.
- .3 Form pieces in 2,400 mm maximum lengths. Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- .1 Install sheet metal work in accordance with CRCA FL series details and as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock forming tight fit over hook strips, as detailed.
- .5 Lock end joints and caulk with sealant.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 84 00 – Firestopping

Page 1 of 5

---

**PART 1      GENERAL**

**1.1            RELATED WORK**

- .1      Fire stopping and smoke seals within mechanical assemblies (i.e inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in Division 23 and 26 respectively.
- .2      Coordinate work of this section with other sections as required to properly execute the work and as necessary maintain satisfactory progress of the work of other sections.

**1.2            RELATED SECTIONS**

- .1      Section 01 33 00 – Submittal Procedures.
- .2      Section 01 45 00 – Quality Control.

**1.3            REFERENCES**

- .1      Underwriter’s Laboratories of Canada (ULC)
  - .1      CAN-S115, Fire Tests of Firestop Systems.

**1.4            DEFINITIONS**

- .1      Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2      Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3      Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4      Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
  - .1      Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

**1.5            SUBMITTALS**

- .1      Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 84 00 – Firestopping

Page 2 of 5

---

- .2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.
- .3 Submit manufacturer's engineering judgement identification number and drawing details when no ULC or cUL system is available. Engineering judgement must include both project name and contractor's name who will install firestop system as described in drawing.
- .4 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation. Include manufacturer's specifications, training letter, and technical data for each material including the composition and limitations, documentation of ULC or CUL firestop systems to be used.
- .5 Submit material safety data sheets provided with product delivered to job site.

**1.6 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 – Quality Control.
- .2 Construct mock-up showing service penetrations, fire separation and floor assemblies. Mock-up may be part of finished work.
- .3 Allow 48h for inspection of mock-up by Owner's Representative before proceeding with membrane work.

**1.7 MANUFACTURER'S REPRESENTATIVE**

- .1 A manufacturer's representative is to be on site during initial installation of firestop systems to train appropriate contractor personnel in proper selection and installation procedures and at commissioning stage to certify acceptance completed installation. Training will be done as per manufacturer's written recommendations published in their literature and drawing details.

**1.8 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Installer: person specializing in fire stopping installations with minimum five (5) years documented experience approved by the fire stopping manufacturer.
  - .2 Manufacturer: company with minimum five (5) years experience in producing of material used for work required for this project, with sufficient production capacity to produce and deliver required units without causing delay in work.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 84 00 – Firestopping

Page 3 of 5

**PART 2      PRODUCTS**

**2.1          MATERIALS**

- .1      Use only firestop products that have been ULC or cUL tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements and fire-rating involved for each separate instance.
- .2      Fire stopping and smoke seal systems: in accordance with CAN-S115.
  - .1      Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN-S115 and not to exceed opening sizes for which they are intended.
  - .2      Firestop system rating: as indicated on drawings.
- .3      Service penetration assemblies: certified and tested by ULC or cUL in accordance with CAN-S115.
- .4      Service penetration firestop components: certified and tested by ULC or cUL in accordance with CAN-S115.
- .5      Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .6      Non-curing, re-penetrable intumescent sealants, caulking or putty material for use with flexible cables or cable bundles.
- .7      Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal. Consult with Owner's Representative and damper manufacturer prior to installation ULC or cUL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- .8      Intumescent sealants or caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe. No silicone based firestop are allowed to be applied on plastic pipes.
- .9      Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .10     Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .11     Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .12     Sealants for vertical joints: non-sagging.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 84 00 – Firestopping

Page 4 of 5

---

**PART 3      EXECUTION**

**3.1            PREPARATION**

- .1      Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2      Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3      Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.
- .4      Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

**3.2            INSTALLATION**

- .1      Install fire stopping and smoke seal material and components in accordance with ULC certification or UL Products Certified for Canada (CUL) and manufacturer's instructions.
- .2      Seal holes or voids made by through penetrations, poke-through termination devices, and un-penetrated openings (i.e. large device boxes) or joints to ensure continuity and integrity of fire separation are maintained.
- .3      Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4      Tool or trowel exposed surfaces to a neat finish.
- .5      Remove excess compound promptly as work progresses and upon completion.

**3.3            INSPECTION**

- .1      Notify Owner's Representative when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

**3.4            SCHEDULE**

- .1      Firestop and smoke seal at:
  - .1      Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - .2      Edge of floor slabs at curtain wall and precast concrete panels.
  - .3      Top of fire-resistance rated masonry and gypsum board partitions.
  - .4      Intersection of fire-resistance rated masonry and gypsum board partitions.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 07 84 00 – Firestopping**

**Page 5 of 5**

---

- .5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
- .6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
- .7 Openings and sleeves installed for future use through fire separations.
- .8 Around mechanical, electrical or any building service-related devices or assemblies penetrating or partially recessed in fire separations.
- .9 Rigid ducts: greater than 129 cm<sup>2</sup>: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

**3.5 FIRE SEPARATIONS**

- .1 Coordinate fire separation labelling/stenciling as per Sections 09 91 23 – Interior Painting and 09 91 23.01 – Interior Re-Painting.

**3.6 CLEAN UP**

- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
- .2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 1 of 8

**PART 1      GENERAL****1.1      SECTION INCLUDES**

- .1      Materials, preparation and application for caulking and sealants.
- .2      Text to complete other various Sections containing sealant or caulking specifications.

**1.2      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 45 00 - Quality Control.
- .3      Section 01 61 00 - Common Product Requirements.
- .4      Section 01 74 21 – Construction Waste Management and Disposal.

**1.3      REFERENCES**

- .1      American Society for Testing and Materials (ASTM)
  - .1      ASTM C661, Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
  - .2      ASTM C719, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).
  - .3      ASTM C794, Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
  - .4      ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications.
  - .5      ASTM C920, Standard Specification for Elastomeric Joint Sealants.
  - .6      ASTM D412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
- .2      International Organization for Standardization (ISO)
  - .1      ISO 868 Plastics and ebonite – Determination of indentation hardness by means of a durometer (Shore hardness)
  - .2      ISO 1183 Plastics – Methods for determining the density of non-cellular plastics
  - .3      ISO 10563 Buildings and civil engineering works – Sealants – Determination of change in mass and volume
- .3      Department of Justice Canada:
  - .1      Canadian Environmental Protection Act (CEPA).
- .4      Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1      Material Safety Data Sheets (MSDS).
- .5      Transport Canada (TC)
  - .1      Transportation of Dangerous Goods Act (TDGA).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 2 of 8

**1.4 SUBMITTALS**

- .1 Manufacturer's product data to describe.
  - .1 Caulking compound.
  - .2 Primers.
  - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
  - .4 Installation instructions, surface preparation and product limitations.
- .2 Cured samples of exposed sealants for each color where required to match adjacent material.
- .3 Manufacturers' instructions to include installation instructions for each product used.
- .4 Manufacturer's maintenance information to include required review periods and maintenance requirements to maintain warranty coverage.

**1.5 QUALITY ASSURANCE**

- .1 Mock-Up
  - .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
  - .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant. Mock-up may be part of finished work.
  - .3 Allow for review of mock-up by Owner's Representative before proceeding with sealant work. Review will be completed during the next scheduled site visit.
  - .4 Mock-up will be used to judge workmanship, substrate preparation, operation of equipment and material application.
  - .5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work.
- .2 Bond Testing
  - .1 Manufacturer to perform a bond test to confirm primer requirements for maximum adhesion based on actual flashing metal and colour of sealant.
  - .2 Confirm any risk of adverse staining or discolouration that would impair the visual appearance of the substrate.
  - .3 Manufacturer to submit verification report that includes all acceptable installation requirements for each intended use.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 3 of 8

**1.7 ENVIRONMENTAL AND SAFETY REQUIREMENTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

**1.8 PROJECT CONDITIONS**

- .1 Environmental Limitations:
  - .1 Do not proceed with installation of joint sealants under following conditions:
    - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer, or are below 4.4°C.
    - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
  - .1 Do not proceed with installation of joint sealants where joint widths are less than or greater than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates, per manufacturer's requirements.

**PART 2 PRODUCTS****2.1 SEALANT MATERIALS**

- .1 Sealants and Caulking compounds must:
  - .1 Meet or exceed all applicable governmental and industrial safety and performance standards; and
  - .2 Be manufactured and transported in such a manner that all steps in the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).
- .2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulphate.
- .3 Sealant and caulking compounds must not contain a total of volatile organic compound (VOC's) in excess of 100 grams per litre as calculated from records of the amounts of constituents used to make the product.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 4 of 8

- .4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .5 Where sealants are qualified with primers use only these primers.

## 2.2 SEALANT

- .1 For movement and control joints in the exterior concrete slabs: high performance, one-part, self-levelling, elastomeric, ultra-low modulus and neutral-cure silicone sealant. Must be suitable for horizontal applications subject to moisture, traffic and low temperatures.
  - .1 Movement capability ASTM C719: +100/-50%.
  - .2 Service temperature range: -60<sup>o</sup> to 176<sup>o</sup> C.
  - .3 Shore A hardness to ASTM C661: 40.
  - .4 100% modulus ASTM D412: 0.11 MPa
  - .5 Tensile strength ASTM 412: 0.69 MPa
  - .6 Peel strength ASTM C794: 4.5 kg.cm average.
  - .7 Standard of acceptance: Sikasil-728 SL.
- .2 For movement and control joints in interior concrete slabs exposed to view, without additional finished flooring: single-component, self-levelling, premium-grade polyurethane sealant with accelerated curing capacity.
  - .1 ASTM C920, Type S, Grade P, Class 25.
  - .2 Movement capability +/-25%.
  - .3 Service temperature range: -40<sup>o</sup> to 77<sup>o</sup> C.
  - .4 Shore A hardness to ASTM C661: 40.
  - .5 ASTM D412:
    - .1 100% modulus of elasticity: 0.76 MPa
    - .2 Tensile strength: 1.03 MPa
  - .6 Peel strength on concrete per ASTM C794: 4.9 N/mm
  - .7 Standard of acceptance: Sikflex-1c SL.
- .3 For use in sealing air/vapour barrier penetrations: ASTM C920 Type S, Grade NS, Class 25, moisture cure, medium modulus one-part, low odor / VOC using silyl-terminated polyether polymer:
  - .1 ASTM C719 +/- 25%.
  - .2 Elongation, ultimate: 450-550 %.
  - .3 Modulus, 100%: 275 – 345 kPa (40-50 psi).
  - .4 Shore A Hardness: 25 ±5.
  - .5 Tensile Strength: 1034 – 1378 kPa (150-200 psi)
  - .6 Standard of acceptance:
    - .1 HE925BC – BES Sealant by Henry.
    - .2 Sopraseal Sealant by Soprema
  - .7 VOC: not more than 250 g/L.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 5 of 8

- .4 For general purpose exterior use: ASTM C920 Type S, Grade NS, Class 35 One-component, moisture cure, silicone sealing compound.
  - .1 Movement capability:  $\pm 40\%$ .
  - .2 Modulus, 50% extension: 380 kPa (55 psi).
  - .3 Elongation, ultimate: 550.
  - .4 Shore A Hardness: 25  $\pm 5$ .
  - .5 VOC: 35 g/L.
  - .6 Standard of acceptance: Contractor's Weatherproofing Sealant by Dow Corning.
- .5 For use specifically with aluminum window and curtain wall fabrication, assembly and glazing installation ASTM C 1184 and ASTM C 920 Type M, Grade NS, Class 12 ½ , Use NT multi-component, elastomeric silicone, sealing compound, chemical curing.
  - .1 Tensile strength: 1572 kPa (228 psi).
  - .2 Tear strength: 386 kPa (56 psi).
  - .3 Elongation, ultimate: 219.
  - .4 Shore A Hardness: 43.
  - .5 VOC: 4 g/L.
  - .6 Standard of acceptance: 983 Silicone Glazing & Curtainwall Adhesive/Sealant by Dow Corning.
- .6 For general roofing applications: ASTM C920, Type S, Grade NS, Class 50, Use NT, G, A & O.
  - .1 Standard of acceptance:
    - .1 795 Silicone Building Sealant by Dow Corning.
    - .2 Spectrem 2 High Performance Silicone by Tremco.
    - .3 WS-290 by Sikasil.
- .7 For use at joints around plumbing fixtures and counters (backsplash), and at the junction of counter tops and adjacent wall finishes: Mildew Resistant Sealing Compound for Tubs and Tile.
  - .1 Acceptable products:
    - .1 Tub/Tile/Ceramic Sealant by Dow Chemical.
    - .2 Tub and Tile Caulk by Titebond.
    - .3 385 Tub and Tile Silicone by Boss Products.
- .8 For use in aquatics area, in swimming pool and on pool deck, and in change rooms shower or wet areas:
  - .1 Neutral-curing one-component silicone sealant with anti-fungal treatments, specifically designed for use in swimming pools and shower areas.
  - .2 Material properties:
    - .1 Viscosity at 23°C: pasty, stable.
    - .2 Density at 23°C as per ISO 1183-1: 1.0 g/cm<sup>3</sup>.
    - .3 Shore A hardness as per ISO 868: ~ 30.
    - .4 Permissible movement capability: 20%.
    - .5 Stress expansion modulus at 100% as per DIN 53 504, S3A: 0.6 N/mm<sup>2</sup>.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 6 of 8

- .6 Tensile expansion as per ISO 37, S3A: ~ 350%.
- .7 Tensile strength as per ISO 37 S3A: ~ 1.5 N/mm<sup>2</sup>.
- .8 Temperature resistance range: -40°C to +180°C.
- .9 Shrinkage of volume as per ISO 10563: < 10%.
- .3 Colour matched to grout (as near as possible).
- .4 Standard of acceptance: Ottoseal S 140 from Otto Chemie.
- .9 For between interior pressed steel frames and masonry/gypsum board, junctions between interior finishes and trims, mouldings, etc, and joints around electrical panels, access doors, etc: Siliconized acrylic emulsion compound, fast-setting, paintable
  - .1 Acceptable products:
    - .1 Airtight Siliconized Acrylic Caulk by DuPont.
    - .2 Painters Plus Caulk by Titebond.
    - .3 Alex Plus Acrylic Latex Caulk Plus Silicone by DAP.
- .10 For all non-fire rated, unexposed to view perimeter sealing around wall penetrations, outlets, switch boxes, etc. and vapour barrier continuity: Sealing and Bedding Compound Acoustical as per ASTM C919.
  - .1 Acceptable products:
    - .1 Acoustical Sealant by Tremco.
    - .2 GREENchoice Professional Acoustical Sound Sealant by Titebond.
    - .3 MONO Acoustical Sealant by DAP.
- .11 Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 30 to 50 %.
  - .2 Neoprene or Butyl Rubber.
    - .1 Round solid rod, Shore A hardness 70.
  - .3 High Density Foam.
    - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m<sup>3</sup> density, or neoprene foam backer, size as recommended by manufacturer.
  - .4 Bond Breaker Tape.
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

### 2.3 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 07 92 00 – Joint Sealants

Page 7 of 8

**PART 3      EXECUTION**

**3.1            PROTECTION**

- .1      Protect installed Work of other trades from staining or contamination.

**3.2            SURFACE PREPARATION**

- .1      Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2      Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.
- .3      Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4      Ensure joint surfaces are dry and frost free.
- .5      Prepare surfaces in accordance with manufacturer's directions.

**3.3            PRIMING**

- .1      Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2      Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

**3.4            BACKUP MATERIAL**

- .1      Apply bond breaker tape where required to manufacturer's instructions.
- .2      Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

**3.5            APPLICATION**

- .1      Sealant.
  - .1      Apply sealant in accordance with manufacturer's written instructions.
  - .2      Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3      Apply sealant in continuous beads.
  - .4      Apply sealant using gun with proper size nozzle.
  - .5      Use sufficient pressure to fill voids and joints solid.
  - .6      Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7      Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8      Remove excess compound promptly as work progresses and upon completion.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 07 92 00 – Joint Sealants

Page 8 of 8

---

- .2 Curing.
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
  - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
  - .2 Remove excess and droppings, using recommended cleaners as work progresses.
  - .3 Remove masking tape after initial set of sealant.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 1 of 8

---

**PART 1**      **GENERAL****1.1**            **RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 07 21 20 – Low Expanding Foam Sealant.
- .4      Section 07 92 00 - Joint Sealants.
- .5      Section 08 71 00 - Door Hardware.
- .6      Section 08 80 50 – Glazing.
- .7      Section 09 91 13 - Exterior Painting.
- .8      Section 09 91 23 - Interior Painting.
- .9      Section 23 37 13 - Diffusers, Registers and Grilles.
- .10     Division 26: Wiring for electronic hardware.

**1.2**            **REFERENCES**

- .1      American Society for Testing and Materials (ASTM)
  - .1      ASTM A653/A653M, Specification for Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot Dip Process.
- .2      Canadian General Standards Board (CGSB)
  - .1      CAN/CGSB-1.181, Ready-Mixed Organic Zinc-Rich Coating.
  - .2      CGSB 41-GP-19Ma, Rigid Vinyl Extrusions for Windows and Doors.
- .3      Canadian Standards Association (CSA)
  - .1      G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2      CSA W59, Welded Steel Construction (Metal Arc Welding).
- .4      Canadian Steel Door Manufacturers' Association, (CSDMA).
  - .1      CSDMA, Specifications for Commercial Steel Doors and Frames.
  - .2      CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors.
- .5      National Fire Protection Association (NFPA)
  - .1      NFPA 80, Standard for Fire Doors and Fire Windows.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 2 of 8

- .2 NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN4-S104M, Fire Tests of Door Assemblies.
  - .2 CAN4-S105M, Fire Door Frames Meeting the Performance Required by CAN4-S104.
  - .3 CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .4 CAN/ULC-S702, Thermal Insulation, Mineral Fibre, for Buildings.
  - .5 CAN/ULC-S704, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

### **1.3 DESIGN REQUIREMENTS**

- .1 Design door assembly to withstand minimum 1,000,000 swing cycles in accordance with ANSI A151.1, with no failure of any design features of the door.
- .2 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.
- .3 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
- .4 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 and NFPA 252 for ratings specified or indicated.
- .5 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 and NFPA 252 and listed by nationally recognized agency having factory inspection services and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

### **1.4 SUBMITTALS**

- .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware and fire rating and finishes.
- .2 Indicate each type, frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing fire rating and finishes.
- .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

### **1.5 DELIVERY STORAGE AND HANDLING**

- .1 Deliver, store, handle and protect doors and frames in accordance with Section 01 61 00-Common Product Requirements.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 3 of 8

- .2 Deliver, handle and store doors and frames at the job site in such a manner as to prevent damage.
- .3 Store doors and frames under cover with doors stored in a vertical position on blocking, clear of floor and with blocking between doors to permit air circulation.

**1.6 QUALITY ASSURANCE**

- .1 Conform to requirements to ANSI A117.1
- .2 Company specializing in manufacturing products specified with a minimum of five (5) years documented experience.

**1.7 WARRANTY**

- .1 Provide a written warranty for work of this section from manufacturer for failure due to defective materials and from contractor for failure due to defective installation workmanship, for one (1) year respectively from the date of Substantial Completion.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 Hot dipped galvanized steel sheet: to ASTM A653/A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF75.

**2.2 DOOR CORE MATERIALS**

- .1 Honeycomb: Structural small cell 25 mm maximum kraft paper honeycomb pattern.
  - .1 Weight: 36 kg per ream minimum.
  - .2 Density: 16.5 kg/m<sup>3</sup> minimum.
  - .3 Sanded to the required thickness.
- .2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250°C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E152 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.
- .3 Steel stiffened: Continuous vertical formed steel sections, 0.912 mm (20 ga.) minimum base metal thickness, spaced not more than 150 mm apart, welded at 150 mm on centre (maximum) to each face sheet.
  - .1 Fill voids between stiffeners with fibreglass insulation material complying with ASTM C665.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 4 of 8

- .1 Minimum density: 24 kg/m<sup>3</sup>.

**2.3 PRIMER**

- .1 Touch-up prime CAN/CGSB-1.181.

**2.4 ACCESSORIES**

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior top and bottom caps: rigid PVC extrusion conforming to CGSB 41-GP-19MA.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Door bottom seal: Section 08 71 00 – Door Hardware.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Fire labels: metal riveted.
- .7 Sealant: Section 07 92 00 – Joint Sealants.
- .8 Provide low expanding, single component polyurethane foam sealant installed at head and jamb perimeter of door frame for sealing to building air barrier, vapour retarder and door frame. Foam sealant width to be adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder foam interior. Refer to Section 07 21 20 – Low Expanding Foam Sealant.
- .9 Glazing: Section 08 80 50 – Glazing.
- .10 Make provisions for glazing as indicated and provide necessary glazing stops.
- .1 Provide removable stainless steel glazing beads for dry glazing of snap-on type.
- .2 Design exterior glazing stops to be tamperproof.
- .11 Finish Painting: to Section 09 91 13 – Exterior Painting and Section 09 91 23 – Interior Painting.

**2.5 FRAMES FABRICATION GENERAL**

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 1.6 mm (16 ga.) welded, thermally broken type construction. Anchors to be existing wall anchors, punched and dimpled to accept machine bolt anchors.
- .4 Interior frames: 1.6 mm (16 ga.) welded type construction.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 5 of 8

- .5 Blank, reinforce, drill and tap frames for mortised, template hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .6 Protect mortised cutouts with steel guard boxes.
- .7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .8 Prepare frame for pocket door kit, where specified.
- .9 Manufacturer's nameplates on frames and screens are not permitted.
- .10 Conceal fastenings except where exposed fastenings are indicated.
- .11 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .12 Insulate exterior frame components with polyurethane insulation.

**2.6 FRAME ANCHORAGE**

- .1 Shim and anchor new doors in accordance with CAN/CSA A440.4.
- .2 Provide appropriate anchorage to floor and wall construction.
- .3 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .4 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .5 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

**2.7 FRAMES: WELDED TYPE**

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 6 of 8

- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment. Remove prior to installation of the frame.

## **2.8 DOOR FABRICATION GENERAL**

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
  - .1 Thickness: 44.5 mm thick for all interior and exterior doors.
  - .2 Exterior doors: insulated, hollow steel construction.
  - .3 Interior doors: honeycomb hollow steel construction.
- .2 Fabricate doors with longitudinal edges locked seam. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .3 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104 ASTM E152 NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
- .9 Manufacturer's nameplates on doors are not permitted.

## **2.9 HOLLOW STEEL CONSTRUCTION**

- .1 Form each face sheet for steel-stiffened, insulated core exterior doors from 1.2 mm sheet steel.
- .2 Form each face sheet for honeycomb core interior doors from 1.2 sheet steel.
- .3 Reinforce exterior doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 11 00 - Metal Doors and Frames

Page 7 of 8

---

- .4 Fill voids between stiffeners of exterior doors with insulation as specified.
- .5 Fill voids between stiffeners of interior doors with honeycomb core.

**2.10 THERMALLY BROKEN DOORS AND FRAMES**

- .1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.
- .2 Thermal break: rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break.
- .4 Apply insulation.

**PART 3 EXECUTION**

**3.1 INSTALLATION GENERAL**

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

**3.2 FRAME INSTALLATION**

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

**3.3 DOOR INSTALLATION**

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor as follows.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 11 00 - Metal Doors and Frames

Page 8 of 8

---

- .1 Hinge side: 1.0 mm.
- .2 Latch side and head: 1.5 mm.
- .3 Finished floor: 13 mm.
- .3 Adjust operable parts for correct function.
- .4 Install louvres.

**3.4 FINISH REPAIRS**

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

**3.5 GLAZING**

- .1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing.

**3.6 COMMISSIONING**

- .1 Contractor to instruct maintenance personnel in operation and maintenance of doors and hardware.
- .2 Confirm operation and function for all doors and hardware.
- .3 Commissioning will be witnessed by Owner's Representative and Certificate will be signed by Contractor and Owner's Representative.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 14 16 – Flush Wood Doors

Page 1 of 5

**PART 1      GENERAL****1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 06 20 00 - Finish Carpentry.
- .4      Section 08 11 14 - Metal Doors and Frames.
- .5      Section 08 71 00 - Door Hardware.
- .6      Section 08 80 50 - Glazing.
- .7      Section 23 37 13 - Diffusers, Registers and Grilles.

**1.2            REFERENCES**

- .1      Architectural Woodwork Manufacturers Association of Canada (AWMAC).
  - .1      Quality Standards for Architectural Woodwork.
- .2      American Society for Testing and Materials (ASTM)
  - .1      ASTM B749, Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
- .3      Canadian General Standards Board (CGSB).
  - .1      CAN/CGSB-71.19, Adhesive, Contact, Sprayable.
  - .2      CAN/CGSB-71.20, Adhesive, Contact, Brushable.
- .4      Canadian Standards Association (CSA).
  - .1      CSA O115, Hardwood and Decorative Plywood.
  - .2      CAN/CSA O132.2 Series, Wood Flush Doors.
  - .3      CAN/CSA-O132.5, Stile and Rail Wood Doors.
- .5      Forest Stewardship Council of Canada.
  - .1      Principles and Criteria for wood building components.
- .6      National Fire Protection Association (NFPA).
  - .1      NFPA 80, Standard for Fire Doors and Fire Windows.
  - .2      NFPA 252, Standard Method of Fire Tests of Door Assemblies.
- .7      Underwriters' Laboratories of Canada (ULC).
  - .1      CAN-4S104M, Fire Tests of Door Assemblies.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 14 16 – Flush Wood Doors

Page 2 of 5

---

- .2 CAN4-S105M, Fire Door Frames Meeting the Performance Required by CAN4-S104.

### **1.3 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications, and data sheet.
- .2 Shop Drawings:
  - .1 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.
  - .2 Show door construction, core, glazing detail and faces.
  - .3 Submit wood veneer finish samples.
  - .4 Submit manufacturer's installation instructions.

### **1.4 REGULATORY REQUIREMENTS**

- .1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
- .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
- .3 Doors to be wrapped in protective plastic film. Do not remove film until all work is complete in the area where the door is installed.
- .4 Protect doors from scratches, handling marks and other damage.
- .5 Store doors away from direct sunlight.

### **1.6 WARRANTY**

- .1 Provide a written guarantee, signed and issued in the name of the owner, covering the wood doors for both material and workmanship for a period of 10 years from the date of Substantial Completion.
- .2 Areas which prove to be defective in any way shall be repaired or replaced and any damage to other work as a result of such defects shall be repaired at no cost to the Owner.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 14 16 – Flush Wood Doors

Page 3 of 5

**PART 2      PRODUCTS****2.1      FIRE RATED WOOD DOORS**

- .1 Wood doors: tested in accordance with CAN4-S104 NFPA 252 to achieve rating as scheduled shall have a low combustible agrifibre core (asbestos free).
  - .1 Face panels:
    - .1 Hardwood veneer grade: Grade I Premium.
    - .2 Rotary cut natural maple with continuous grain from a single piece of veneer.
  - .2 Factory finishing: to manufacturer's standard: Clear BC-00-25, 25% gloss.
  - .3 Standard of acceptance:
    - .1 45 minute fire-rated: AF45-MO Neutral Pressure by Baillargeon.
    - .2 Type M steel lite bead profile for doors with glazing.

**2.2      WOOD FLUSH DOORS**

- .1 Typical application: Solid core: to CAN/CSA-O132.2.1.
  - .1 Solid or part-glazed as per Door Schedule.
  - .2 Construction:
    - .1 Stile and rail frame bonded to solid particleboard core with wood lock blocks 5-ply construction.
  - .3 Face Panels:
    - .1 Hardwood veneer grades: Grade I Premium.
    - .2 Rotary cut natural maple with continuous grain from a single piece of veneer.
  - .4 Factory finishing: to manufacturer's standard: Clear BC-00-25, 25% gloss.
  - .5 Standard of acceptance:
    - .1 8600-ME by Baillargeon.
    - .2 Type F flush lite bead profile for doors with glazing.
- .2 Doors with full lights:
  - .1 Same as typical application except core to be laminated strand lumber suitable for maintaining warranty for full light doors.
    - .1 Standard of acceptance:
      - .1 6000-ME by Baillargeon.

**2.3      GLAZING**

- .1 Glass: to Section 08 80 50 – Glazing.

**2.4      FABRICATION**

- .1 Vertical edge strips to match face veneer.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 14 16 – Flush Wood Doors

Page 4 of 5

---

- .2 Prepare doors for louvres and glazing. Provide hardwood species to match face veneer glazing stops with mitred corners.
- .3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.
- .4 Radius vertical edges of double acting doors to 60 mm radius.
- .5 Provide waterproof non-staining membrane at cut-outs on exterior doors to exclude moisture from core.
- .6 Factory machine doors to accept all finish hardware in accordance with hardware requirements and dimensions. Provide edge clearances in accordance with AWMAC.
- .7 Apply factory-finish coatings.

**PART 3**      **EXECUTION**

**3.1**            **MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

**3.2**            **INSTALLATION**

- .1 Protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.
- .2 Install labelled fire rated doors to NFPA- 80.
- .3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.
- .4 Adjust hardware for correct function.
- .5 Install glazing in accordance with Section 08 80 50 - Glazing.
- .6 Install louvres and stops.

**3.3**            **ADJUSTMENT**

- .1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

**3.4**            **CLEANING**

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 14 16 – Flush Wood Doors

Page 5 of 5

---

- .2 Remove traces of primer, caulking; clean doors and frames.
- .3 Clean glass and glazing materials with approved non-abrasive cleaner.
- .4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.5 COMMISSIONING**

- .1 Contractor to instruct maintenance personnel in operation and maintenance of doors and hardware.
- .2 Confirm operation and function for all doors and hardware.
- .3 Commissioning will be witnessed by Owner's Representative and certificate will be signed by Contractor and Owner's Representative.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 15 10 – Fiberglass Doors and Frames

Page 1 of 6

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3      Section 07 92 00 - Joint Sealants.
- .4      Section 08 71 00 - Door Hardware.
- .5      Section 08 80 50 – Glazing.
- .6      Section 09 91 23 - Interior Painting.

**1.2      REFERENCES**

- .1      Codes and standards referenced in this section refer to the latest edition thereof.
- .2      American Society for Testing and Materials, (ASTM).
  - .1      ASTM D635, Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
  - .2      ASTM E84, Test Method for Surface Burning Characteristics of Building Materials.
  - .3      ASTM E 152, Standard Methods of Fire Tests of Door Assemblies.
- .3      National Fire Protection Association (NFPA).
  - .1      NFPA 252: Standard Methods of Fire Tests of Door Assemblies.
  - .2      NFPA 80: Standard for Fire Doors and Other Openings.
- .4      Underwriters Laboratories (UL).
  - .1      UL 10C, Positive Pressure Fire Tests of Door Assemblies

**1.3      SUBMITTALS**

- .1      Shop Drawings:
  - .1      Indicate each type of door, material, thicknesses, mortises, reinforcements, location of exposed fasteners, openings and arrangement of hardware.
  - .2      Indicate each type frame, material, thickness, reinforcements, glazing stops, anchorages and exposed fastenings.
  - .3      Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .2      Manufacturer's Instructions:

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 15 10 – Fiberglass Doors and Frames

Page 2 of 6

---

- .1 Submit manufacturer's installation instructions.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Cover exposed fiberglass surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping doors and frames to job site.
- .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.
- .3 Deliver, handle and store doors and frames at the job site in such a manner as to prevent damage. Doors shall not be received before the building is enclosed. Only remove cartons upon arrival of doors at job site if cartons are wet or damaged. Doors shall be stored out of weather and/or extreme temperatures. The doors shall be stored in a vertical position on blocking, clear of the floor and with blocking between the doors to permit air circulation between the doors.

#### **1.5 DESIGN REQUIREMENTS**

- .1 Flame Spread: All FRP component parts, including the finish, shall have a flame spread classification of 25 or less per ASTM E84 and shall be self extinguishing per ASTM D635 unless operating conditions dictate otherwise.
- .2 Fire rated door, panel and frame construction to conform to products tested under ASTM E152, UL 10C and NFPA 252.
- .3 Products have successfully completed ANSI A250.4-2011 cycle swing test in excess of 1,000,000 cycles, with no failure of any design features of the door.

#### **1.6 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for cleaning and maintenance of fiberglass doors and frames for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

#### **1.7 WARRANTY**

- .1 Provide a written guarantee, signed and issued in the name of the owner, covering the fiberglass doors and frames for both material and workmanship for a period of 10 (ten) years from the date of Substantial Completion.
- .2 Provide lifetime warranty from degradation or failure due to corrosion provided that the structural integrity of the doors and frames have not been violated or compromised. (No unauthorized cuts, bores, or other structural alterations affecting the core of the door, or the structure of the frame.)

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 15 10 – Fiberglass Doors and Frames

Page 3 of 6

**PART 2      PRODUCTS****2.1            STANDARD OF ACCEPTANCE**

- .1      Products manufactured by the following company or complying with these specifications will be acceptable: CORRIM Company.

**2.2            DOOR CONSTRUCTION AND MATERIALS**

- .1      Core:
  - .1      Regular doors: polyurethane foam to ASTM E-84, Class A, CFC free. Full-sized rigid block of polyurethane laminated to interior faces of panels. No voids.
  - .2      Fire rated doors: mineral core. Rating as indicated on Door Schedule.
- .2      Stiles and Rails: Stiles and rails shall be 38 mm square pultruded fiberglass tubes. A polyester-based resin filled with 6 mm chopped glass strands and aerosil shall be used for reinforcements and corner blocks, etc. The bottom rail shall allow 30 mm of height alterability without loss of the panel's integrity. No metal or wood lumber reinforcements will be allowed.
- .3      Face Sheets: Standard face sheets shall be manufactured using a corrosion resistant resin system with light stabilizing additives. The resin shall be reinforced with fiberglass, 40% by weight.
  - .1      Face sheets shall be 1.8 mm to 3.2 mm in thickness. Standard being 3.0 mm. Total door thickness to be a nominal 44.5.
- .4      Finish:
  - .1      Supply with manufacturer-applied polyurethane primer.
  - .2      Refer to Section 09 91 23 - Interior Painting for field-applied paint finish.

**2.3            HARDWARE PREPARATION**

- .1      Reinforcement Blocking:
  - .1      Lockset, Surface mounted hardware, and thru-bolted hardware: non-swelling polymer blocking.
  - .2      Mortise Hardware:
    - .1      Full mortise hinges - non-swelling polymer blocking.
    - .2      Mortise locksets and exit devices - to suit template provided.
  - .3      All doors shall be mortised and reinforced to allow application of hinges and locks, in accordance with hardware schedule and manufacturer's templates. The hinges shall be attached by using stainless steel wood screws. Pilot holes shall be in strict accordance to manufacturer's recommendations.

**2.4            FRAMES**

- .1      Fabrication general:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 15 10 – Fiberglass Doors and Frames

Page 4 of 6

- .1 Fire rating required if indicated on door schedule.
  - .2 Jamb Depth: Refer to drawings for wall thicknesses.
  - .3 Face Dimension: 50 mm standard.
  - .4 Return: 12 mm.
  - .5 Rabbet: 49 mm.
  - .6 Corner Miter: Head and Jamb members shall be standard 45 degree miter, providing a neatly mitered corner connection, fabricated for knocked down (KD) field assembly. Ensure all corner joints are sealed.
  - .7 Pultrusion: In compliance with pultrusion industry standards.
- .2 Reinforcements and Braces/Supports:
- .1 Corner Reinforcement: 101mm x 101mm x 136mm x 6mm thick pultruded fiberglass angle. Attached to head bar at factory using stainless steel screws or suitable polymer rivets.
  - .2 Mortise Hinge Reinforcement: 38mm x 178mm x 6mm thick polymer. Attached to frame by means of bonding and stainless steel countersunk screws.
  - .3 Closer Reinforcement: Same as mortise hinge reinforcement, less screws.
  - .4 Strike Reinforcement: 38mm x 228mm x 19mm thick polymer material. Attached to frame by means of bonding and stainless steel countersunk screws or suitable polymer rivets.
- .3 Anchoring Systems:
- .1 T-Strap for metal studs or Wire Anchor for masonry construction.
- .4 Finish:
- .1 Supply with manufacturer-applied polyurethane primer.
  - .2 Refer to Section 09 91 23 - Interior Painting for field-applied paint finish.

## **2.5 FABRICATION GENERAL**

- .1 Fabricate FRP doors and frames as shown on the drawings and in accordance with best shop practices. Frames shall be rigid, neat in appearance and free from defects. Field measurements shall be taken as required for coordination with adjoining work.
- .2 Form exposed surfaces free from warp, wave and buckle, with all corners square, unless otherwise shown. Set each member in proper alignment and relationship to other members with all surfaces straight and in a true plane.
- .3 Reinforce members and joints with plates, tubes or angles for rigidity and strength.
- .4 Fire rated: UL labelled FRP frames to suit rating required. Standard one-piece profile with integral stop: 146 mm x 50 mm equal rabbet.
  - .1 Frames that must be grouted solid with mortar in the field to achieve rating are not acceptable.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 15 10 – Fiberglass Doors and Frames

Page 5 of 6

- .5 Doors and frames shall be mortised and reinforced for hardware in accordance with the hardware manufacturer's instructions and templates. The reinforcing shall be designed to receive hinges, locks, strikes, closures, etc.
- .6 Mortar guard boxes shall be provided for hardware cutouts in frames.
- .7 Furnish at least three (3) metal anchors or polymer spacers in each jamb of frames up to 2134 mm high and one (1) additional anchor for each 610 mm in height above 2134, in shapes, sizes and spacing shown or required for anchorage into adjoining wall construction. Fabricate joint anchor of stainless steel.
- .8 Terminate bottom of frames at the indicated finished floor level.
- .9 Provide clearance for doors of 3 mm at jambs and heads; 6 mm clearance above threshold.

**PART 3      EXECUTION**

**3.1      INSPECTION**

- .1 Installer shall examine the substrate and conditions under which fiberglass reinforced plastic work is to be installed and notify the Contractor of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

**3.2      INSTALLATION**

- .1 Install FRP doors, frames and accessories in accordance with final shop drawings and as herein specified. Installation to be similar to that of hollow metal doors and frames, and in accordance with FRP manufacturer's written instructions.
- .2 Install fire rated doors, panels and frames in conformance with NFPA 80 for fire-rated class.
- .3 Place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position and at correct elevation, square, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged. Frame must not be drilled for brace supports as finish may be damaged.
- .4 In masonry construction, locate three (3) wall anchors per jamb at hinge and strike levels. Frames may be grouted full of mortar at jambs and anchors shall be built into the joints as walls are laid up. A continuous bead of silicone sealant is to be applied between the head and jamb at the mitre joint.
- .5 Tolerances: Maximum Diagonal Distortion 6 mm measured with a straight edge, corner to corner. Maximum measurable plane is 1220 mm x 2100 mm.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 15 10 – Fiberglass Doors and Frames

Page 6 of 6

---

- .6 Field paint in accordance with applicable MPI systems as specified in Section 09 91 23 - Interior Painting.
- .7 Install door hardware and silencers.
- .8 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

**3.3 CLEANING**

- .1 Remove dirt and excess sealant from exposed surfaces. Follow the manufacturer's recommended cleaning techniques and procedures for cleaning all surfaces.
- .2 Use only cleaning products that will not scratch or damage the surfaces and are recommended by the manufacturer.

**3.4 COMMISSIONING**

- .1 Contractor to instruct maintenance personnel in operation and maintenance of doors and hardware.
- .2 Confirm operation and function for all doors and hardware.
- .3 Commissioning will be witnessed by site Representative and certificate will be signed by Contractor and Site Representative.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 31 13 – Access Doors and Frames

Page 1 of 3

---

**PART 1      GENERAL**

**1.1            RELATED SECTION**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 61 00 - Common Product Requirements.
- .3      Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4      Section 01 78 00 - Closeout Submittals.
- .5      Section 04 05 00 – Common Work Results for Masonry.
- .6      Section 09 21 16 - Gypsum Board Assemblies.
- .7      Section 09 30 00 – Ceramic and Porcelain Tiling.

**1.2            SHOP DRAWINGS**

- .1      Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

**1.3            CLOSEOUT SUBMITTALS**

- .1      Provide maintenance data for cleaning and maintenance of stainless steel finishes for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.4            DELIVERY, STORAGE AND HANDLING**

- .1      Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2      Apply temporary protective coating to finished surfaces. Leave protective covering in place until final cleaning of building. Do not use coatings that will become hard to remove or leave residue.

**PART 2      PRODUCTS**

**2.1            ACCESS DOORS**

- .1      Sizes: Unless indicated otherwise, minimum sizes as follows:
  - .1      For body entry: 600 x 600 mm.
  - .2      For hand entry: 300 x 300 mm.
- .2      Access door construction:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 31 13 – Access Doors and Frames

Page 2 of 3

- .1 Non fire rated assembly: flush mount with rounded safety corners, concealed hinged, screwdriver latch and anchor straps. Must be able to open 100 degrees or greater.
- .2 Fire rated assembly: Flush mount, ULC listed, spring self closing with inside latch release, concealed hinge, rating to match assembly and material as per section 2.1.3 below. Construction: Rounded safety corners with concealed hinges, screwdriver latch and anchor straps. Must be able to open 100 degrees or greater.
- .3 **Materials**
  - .1 Type 304 stainless steel with satin finish for all access doors and frames in the following areas:
    - .1 All washrooms,
    - .2 All janitor's rooms,
    - .3 All entrance or exit vestibules,
    - .4 Where directly exposed to the pool area including all mezzanine and deck space, storage rooms and lifeguard spaces.
    - .5 All change rooms and washrooms.
  - .2 Other areas: Prime coated steel, pre-finished or field-painted to match adjacent wall or ceiling finish.

## **2.2 EXCLUSIONS**

- .1 Lay-in tile ceilings: use unobtrusive identification locators.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- .1 Ensure that equipment to be accessed is within view and/or reach of access doors and that it is accessible for operating, inspecting, adjusting and servicing without using special tools that would not normally be required.
- .2 Install access doors plumb and level. Ceiling access doors are to be oriented parallel to adjacent or room-enclosing walls.
- .3 Ensure that access door frames are mounted flush to the adjacent surface finish.
- .4 Ensure that doors operate freely.
- .5 Field-paint primed steel access doors and frames to match the wall or ceiling finish.

### **3.2 SCHEDULE**

- .1 Provide access doors in all walls and in gypsum board ceilings at the following locations:
  - .1 Electrical junction points.
  - .2 Trap primer locations.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 31 13 – Access Doors and Frames

Page 3 of 3

---

- .3 In-floor heating manifolds.
- .4 Plumbing clean-outs.
- .5 Balancing dampers.
- .6 Control dampers.
- .7 Control valves.
- .8 Shut-off valves.
- .9 Sprinkler valves.
- .10 Any other device requiring maintenance, access for inspection or building operator access.
- .11 Any other locations as determined by Owner's Representative on site.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 1 of 7

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 33 00 – Submittal Procedures.
- .2      Section 01 74 21 – Construction / Demolition Waste Management and Disposal.
- .3      Section 01 78 00 - Closeout Submittals.
- .4      Section 07 21 20 – Low Expanding Foam Sealant.
- .5      Section 07 42 43 – Composite Aluminum Wall Panels.
- .6      Section 07 62 00 – Sheet Metal Flashing.
- .7      Section 07 92 00 - Joint Sealants.
- .8      Section 08 80 50 - Glazing.

**1.2      REFERENCES**

- .1      Aluminum Association Designation System for Aluminum Finishes (AA).
  - .1      DAF 45, Designation System for Aluminum Finishes.
- .2      American Architectural Manufacturers Association (AAMA).
  - .1      AAMA 501, Methods of Test for Exterior Walls
  - .2      AAMA CW-10 Care and Handling of Architectural Aluminum from Shop to Site.
  - .3      AAMA CW-1 Installation of Aluminum Curtain Walls.
- .3      American Society for Testing and Materials (ASTM)
  - .1      ASTM B209, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - .2      ASTM B221, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
  - .3      ASTM E330, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- .4      Canadian General Standards Board (CGSB)
  - .1      CGSB 1-GP-40M Primer, Structural Steel, Oil Alkyd Type.
- .5      Canadian Standards Association (CSA)
  - .1      CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
  - .2      CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 2 of 7

**1.3 SYSTEM DESCRIPTION**

- .1 All exterior window types are to be constructed from curtain wall sections.
- .2 Vertical glazed aluminum curtain wall system includes thermally broken tubular aluminum sections with supplementary support framing, shop fabricated and factory prefinished complete with vision glass as per Section 08 80 50, related flashings, anchorage and attachment devices.
- .3 Assembled system to permit re-glazing of individual glass units without requiring the removal of structural mullion sections.

**1.4 PERFORMANCE REQUIREMENTS**

- .1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, snow and hail for sloped glazing, acting normal to plane of system as calculated in accordance with NBC.
- .2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E330 under wind loads for building capacity as ascertained by NBC supplement No. 1 Climatic Information for Building Design in Canada, with full recovery of glazing materials.
- .3 Provide system to accommodate, without damage to components or deterioration of seals:
  - .1 Movement within system.
  - .2 Movement between system and perimeter framing components.
  - .3 Dynamic loading and release of loads.
  - .4 Deflection of structural support framing.
  - .5 Shortening or creep of building concrete structural members.
- .4 Limit air infiltration through assembly to 0.0003 m<sup>3</sup>/s/m<sup>2</sup> of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with AAMA 501.
- .5 Vapour seal with interior atmospheric pressure of 25 mm sp, 22EC, 40% RH: No failure.
- .6 Water leakage at 500 Pa: none, when measured in accordance with AAMA 501.
- .7 Condensation resistance (temperature index): equal to I-48 as per CSA A440.1.
- .9 System to provide for expansion and contraction within system components caused by a cycling temperature range of 95°C over a 12 hour period without causing detrimental affect to system components.
- .10 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 3 of 7

- .11 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

## **1.5 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet.
  - .2 Submit manufacturer's installation instructions.
- .2 Shop Drawings:
  - .1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking.
  - .2 Shop drawings to indicate continuation of air barrier and vapour barrier between wall assembly and aluminum curtain wall assembly.
  - .3 Shop drawings shall bear the stamp of a qualified Professional Engineer registered to practice in the province of Newfoundland and Labrador.
- .3 Test Reports:
  - .1 Submit test reports from approved independent testing laboratories certifying compliance with required performance specifications.

## **1.6 MAINTENANCE DATA**

- .1 Provide maintenance data for cleaning and maintenance of aluminium finishes for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

## **1.7 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 – Quality Control.
- .2 Install one complete curtain wall unit in wall opening with all insulating foam, sealant and flashings in place.
- .3 Mock-up will be reviewed by Owner's Representative during next scheduled site visit. Mock-up must be reviewed before proceeding with the remainder of installations.
- .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements and AAMA CW-10.
- .2 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 4 of 7

**1.9 WARRANTY**

- .1 Provide a written guarantee in the name of the owner stating that the curtain wall system; including but not limited to frames, glazing, panels, flashings, etc., is guaranteed against material and workmanship for a period for 5 years.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 Aluminum Extrusions: to ASTM B221, thermosetting quality.
- .2 Sheet Aluminum: to ASTM B209, thermosetting quality.
- .3 Steel Reinforcement: to CSA-G40.20/G40.21M, grade 300 W.
- Fasteners: stainless steel.

**2.2 ALUMINUM CURTAIN WALL**

- .1 Construct thermally broken frames of aluminum extrusions with minimum wall thickness of 3.0 mm; thermally broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide adequate bite on glass and infill panels; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
- .1 Reinforce as required to meet all structural and wind-loading requirements of NBCC for the location of building and size of glazed units.
- .2 Standards of acceptance:
- .1 1600 Series by Kawneer
  - .2 2500 Versa Wall by Alumicor
  - .3 8000 Series by Commdoor
  - .4 Anotec Series 3400
- .2 Curtain Wall sizes:
- .1 Window mullions:
- .1 Exterior cap: 63.5 mm x 19.1 mm.
  - .2 Width: 63.5 mm
  - .3 Overall depth (including exterior cap and glazing)
    - .1 Typical: 190 mm
    - .2 Contractor may supply shorter back sections if structural design allows.
  - .4 Supply internal reinforcement of shaped steel structural section as required by supplier's structural designer to resist wind loads.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 5 of 7

- .3 Glazing: Refer to Section 08 80 50 – Glazing.
- .4 Flashings: 3 mm thick aluminum, finish to match curtain wall mullion sections. Where exposed, secured with concealed fasteners. Refer to details for flashing requirements.

### **2.3 FINISHES**

- .1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
  - .1 Exterior side of curtain wall framing (exterior caps):
    - .1 Clear Anodize, designation AA-M10C21A41, Architectural Class I (0.7 mils minimum coating thickness).
    - .2 Interior side of curtain wall framing and vent components:
      - .1 Clear Anodize, designation AA-M10C21A31, Architectural Class II (0.4 mils minimum coating thickness).
  - .2 Finish steel clips and reinforcing steel with steel primer to CGSB 1-GP-40M.
  - .3 Finish exposed steel components related to the solar shading system to match aluminum finish.

### **2.4 INSULATED SPANDREL PANELS**

- .1 Provide glazed, insulated spandrel panels where indicated on drawings.
- .2 Glass face: refer to Section 08 80 50 – Glazing.
- .3 Back pan: formed from 0.9 mm thick (20 ga.) galvanized steel sheet with a minimum of 64 mm of polyisocyanurate or semi-rigid mineral wool insulation adhered to back of panel. Total depth of back pan not to exceed interior depth of curtain wall mullion.
- .4 Tape/seal all concealed joints and seams to prevent light leakage.

### **2.5 MEMBRANE FLASHING (AIR VAPOUR BARRIER)**

- .1 Self-adhering sheet membrane: as specified in Section 07 27 00.01 – Air Barriers.

### **2.6 FABRICATION**

- .1 Provide structural steel reinforcement as required to meet environmental design requirements and span limitation pertinent to this project.
- .2 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly as required to allow installation and dynamic movement of perimeter seal.
- .3 Fit joints tightly and secure mechanically. Make joints flush, hairline, and weatherproof.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 6 of 7

- .4 Prepare components to receive anchor devices. Install anchors.
- .5 Arrange fasteners and attachments to ensure concealment from view.
- .6 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.
- .7 Visible manufacturer's identification labels not permitted.

**PART 3      EXECUTION**

**3.1            EXAMINATION**

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

**3.2            INSTALLATION**

- .1 Install curtain wall system in accordance with manufacturer's instructions and AAMA CW-1.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities. Make allowances for deflection of structure to ensure that structural loads are not transmitted to frames.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.
- .4 Set frames plumb, square, level at correct elevation in alignment with adjacent work, and anchor securely.
- .5 Provide thermal isolation where components penetrate or disrupt building insulation. Insulate shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .6 Adjust any operable parts for correct function.
- .7 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials and install flashings.
- .8 Site Tolerances:
  - .1 Maximum variation from plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.
  - .2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
  - .3 Maximum sealant space between curtain wall and adjacent construction: 13 mm.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 44 13 – Glazed Aluminum Curtain Walls

Page 7 of 7

---

**3.3 GLAZING**

- .1 Glaze curtain wall in accordance with Section 08 80 50 - Glazing.

**3.4 CAULKING**

- .1 Seal joints to provide weathertight seal at outside and air vapour seal at inside.
- .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within the aluminum work except where exposed use is permitted by Owner's Representative.

**3.5 CLEANING**

- .1 Remove protective material from prefinished aluminum surfaces and wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .2 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 1 of 41

**Part 1            General****1.1            GENERAL REQUIREMENTS**

- .1            Comply with requirements of Division 1.
- .2            Furnish and delivery of all finish hardware necessary for all doors. Also hardware as specified herein and as enumerated in “Set Numbers” and as indicated and requested by actual conditions of the building. The hardware shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields, drop plates and all other devices necessary for the proper installation of the hardware.
- .3            The Engineer-Architect approval of the schedule will not be construed as certifying that the list is complete. Acceptance of the Hardware Schedule does not relieve the supplier of responsibility of errors or omissions.
- .4            Hardware should not be ordered unless a corrected copy of the shop drawings is reviewed and returned from the specification writer and bearing the approval of the Engineer-Architect.
- .5            Aluminum Door hardware is to be ordered immediately after approval of shop drawings and shipped directly to the Aluminum Door supplier.
- .6            Furnish, deliver and install all finish hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware group indicated by actual conditions at the project site.
- .7            The electrical hardware shall include the furnishing of plug in connections and final connections of Low voltage wiring at the door opening. Electrical hardware devices to be installed by section 08 71 00 with all final connection with termination above the frame. Electric hardware devices for the proper operation and application of the hardware noted by connection notes in the hardware schedule. Power, conduit, low voltage wire to junction box above the frame. Connection of the card readers, maglocks and high voltage wire by the electrical section Division 28.
- .8            Division 28 to provide high voltage wiring and conduit to the door opening or power supplies including conduit to hardware locations.

**1.2            RELATED SECTIONS**

- .1            Section 01 33 00 - Submittal Procedures.
- .2            Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3            Section 07 21 20 – Low Expanding Foam Sealant.
- .4            Section 07 92 00 - Joint Sealants.
- .5            Section 08 80 50 – Glazing.
- .6            Section 09 91 13 - Exterior Painting.
- .7            Section 09 91 23 - Interior Painting.
- .8            Section 23 37 13 - Diffusers, Registers and Grilles.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 2 of 41

- .9 Division 26: Wiring for electronic hardware03 10 00 – Concrete Forming and Accessories

**1.3****REFERENCES**

- .1 American National Standards Institute (ANSI) A117.1 Specification
- .1 ANSI/BHMA A156.1-2006, Butts and Hinges.
- .2 ANSI/BHMA A156.26-2006, Continuous Hinges.
- .3 ANSI/BHMA A156.13-2005, Mortise Locks and Latches.
- .4 ANSI/BHMA A156.3-2001, Exit Devices.
- .5 ANSI/BHMA A156.4-2000, Door Controls (Closers)
- .6 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
- .7 ANSI/BHMA A156.6-2005, Architectural Door Trim.
- .8 ANSI/BHMA A156.7-2003, Template Hinge Dimensions.
- .9 ANSI/BHMA A156.8-2005, Door Controls - Overhead Holders.
- .10 ANSI/BHMA A156.15-2006, Closer/ Holder Release Device.
- .11 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
- .12 ANSI/BHMA A156.18-2006, Materials and Finishes.
- .13 ANSI/BHMA A156.19-2007, Power Assist and Low Energy Power Operated Doors.
- .14 ANSI/BHMA A156.21-2006, American National Standards for Thresholds.
- .15 ANSI/BHMA A156.22-2005, Door Gasketing and Edge Seal Systems.
- .16 ANSI/BHMA A156.24-2003, Delayed Egress Locks.
- .17 ANSI/BHMA A156.25-2002, Electrified Locking Devices.
- .18 ANSI/BHMA A156.29-2001, American National Standards for Exit Locks, Exit Locks with Alarms, Exit Alarms, Alarms for Exits.
- .19 ANSI/BHMA A156.30-2003, American National Standards for High Security Cylinders.
- .20 ANSI/BHMA A156.31-2001, American National Standards for Electric Strikes and Frame Mounted Actuators.
- .2 Canadian Standards Association (CSA)
- .1 CAN/CSA-B651-04. Accessible Design for the Built Environment.
- .3 Canadian Steel Door Manufacturer's Association (CSDMA).
- .1 Standard Hardware Locations in Accordance with the Canadian Steel Door and Frame Association Guidelines.
- .2 Recommended locations for Architectural Hardware for Wood Flush Doors.
- .4 National Fire Protection Agency(NFPA)
- .1 NBC - National Building Code – Latest Edition
- .2 NFPA-80 - Standard for Fire Doors and Windows – Latest Edition
- .3 NFPA101 - Life Safety Code – Latest Edition
- .4 NFPA-105 - Smoke and Draft Control – Latest Edition

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 3 of 41

**1.4 ABBREVIATIONS**

.1 The following abbreviations are applicable to this section:

.1	AHC	Architectural Hardware Consultant
.2	ALD ALF	Aluminum Door and Frame
.3	ATMS/STMS	Arm/Strike to Template with Machine Screws
.4	BB or FBB	Ball Bearing Hinges
.5	BC	Back Check
.6	BTB	Back to Back
.7	B3E or B4E	Bevel 3 or 4 sides
.8	C to C, C/L	Centerline to Centerline
.9	CDC	Certified Door Consultant
.10	CMK	Construction Masterkeyed
.11	CSC	Construction Specifications Canada
.12	CSK	Countersunk Screw Holes.
.13	Cyl.	Cylinder of a lock
.14	Deg.	Degree of opening
.15	DEL	Delay Action
.16	DHI	Door and Hardware Institute
.17	DR	Door
.18	FC	Full Cover
.19	FS	Fail Safe
.20	FSE	Fail Secure
.21	FTMS	Full template machine screws
.22	½ TMS	Half template machine screws
.23	GMK	Grand Masterkeyed
.24	KA/KD	Keyed Alike, Keyed Different
.25	HMD/PSF	Hollow Metal Door, Pressed Steel Frame
.26	LH/RH	Left Hand, Right Hand
.27	LHR/RHR	Left Hand Reverse, Right Hand Reverse
.28	MK or MKD	Master Keyed
.29	NBC	National Building Code
.30	NRP	Non removable pin
.31	TB/SB	Thru Bolts, Sex Bolts
.32	TJ	Top Jamb
.33	ULC	Underwriters Laboratories Canada
.34	WD	Wood Door

**1.5 SUBMITTALS**

.1 Product Data:

- .1 Submit manufacturer's printed product literature, specifications and data sheets in accordance with Section 01 00 01.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 4 of 41

- .2 Samples:
- .1 Upon Engineer-Architect request submit samples of door hardware. Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .2 After approval samples will be returned for incorporation in the Work.
- .3 Hardware List:
- .1 Submit detailed hardware list and keying schedule. Hardware Schedule is to be submitted as per DHI vertical format which is in the “Sequence and Format for Hardware Schedules”.
- .2 Indicate specified hardware including make, model, material, function, size, finish and other pertinent information.
- .3 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Engineer-Architect.
- .4 Keying Schedule to be in accordance with DHI manual “Keying Systems Names and Nomenclature”. Key schedule is not to hold up the processing of the hardware list.
- .5 Wiring Diagrams will only be supplied after the final approval of the Hardware Schedule. Submit wiring diagrams as requested for proper installation of electrical, electrical-mechanical and electrical-magnetic products.
- .4 Manufacturer’s Instructions: Submit manufacturer’s installation instructions.
- .5 Closeout Submittals: Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware and fire exit hardware for incorporation into Operations and Maintenance Manuals specified in Section 01 00 01.
- .6 Provide guarantee.
- |    |                    |  |
|----|--------------------|--|
| .1 | Closers            | 10 year                                |
| .2 | Mortise Locks      | 10 year mechanical / 2 year electrical |
| .3 | Electronic Closer  | 2 year                                 |
| .4 | Exit Device        | 3 years                                |
| .5 | Hinges             | 1 year                                 |
| .6 | All other Hardware | 1 year                                 |

## 1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Meet requirements of National Building Code of Canada and other applicable regulations.
- .3 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 5 of 41

- .5 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .6 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accord with requirements of Contract Documents and are functioning properly.

**1.7 PRODUCT DELIVERY, HANDLING & STORAGE**

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, store, handle and protect materials in accordance with Section 01 00 01.
  - .2 Package each item of hardware including fastenings, separately or in like groups of hardware, with necessary screws, keys, instructions and installation templates.
  - .3 All items of hardware should be itemized and tagged as per the approved Finish Hardware Schedule.
  - .4 Hardware for Aluminum Doors to be shipped directly to the Aluminum Door supplier. Hardware for Aluminum Doors will be ordered immediately after approval of shop drawings. Delays in ordering the Aluminum Door hardware will not be accepted.
  - .5 Shortages will not delay installation.
  - .6 Items damaged in shipment will be replaced properly with proper material.
  - .7 All Hardware shall be handled in a manner to avoid damage, marking and scratching.
  - .8 Hardware is to be inventoried on site and confirmed by the Contractor and Hardware Supplier.
- .2 Storage and Protection:
  - .1 Store hardware in locked, clean and dry area.

**1.8 WASTE DISPOSAL AND MANAGEMENT**

- .1 Separate and recycle waste materials in accordance with Section 01 00 01.
- .2 Collect and separate metal, plastic, paper packing and corrugated cardboard and deposit in appropriate on site recycling bins.
- .3 Dispose of corrugated cardboard, plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

**1.9 MAINTENANCE**

- .1 Provide maintenance materials in accordance with Section 01 00 01.
- .2 Provide three sets of maintenance tools for closers, locks and exit devices as well as a complete set of installation instructions.
- .3 After the building is occupied, arrange for an appointment with the owner to instruct them of proper use, service, adjusting and maintenance of the hardware furnished in this section.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 6 of 41

- .4 Extra Material if required.

### **1.10 INSPECTION**

- .1 The hardware supplier shall arrange at least four visits to the job site.
- .1 Visit project at time of delivery of hardware and inspect the personnel who will be looking after the installation and issuing of hardware at the job site. Delivered hardware to be received, sorted and itemized at the jobsite with contractor.
- .2 Second visit will be required for key meeting with the owner/representative at a location at their request.
- .3 Third visit will take place when about sixty percent of hardware is installed.
- .4 Check all hardware on site and correct any errors or shortages. Co-ordinate with contractor to determine proper time for visit.
- .5 Fourth visit shall take place just prior to building turnover. All hardware shall be checked for proper installation and adjustment. Any errors shall be corrected and adjustments made. Check the key system and furnish a report along with maintenance manuals detailing any errors found.
- .6 Cost of this service will be included as part of this Section and is not covered by any allowance amount.

## **Part 2 Products**

### **2.1 HARDWARE ITEMS**

- .1 Only locksets and latchsets listed are acceptable for use on this project.
- .2 Use one manufacturer's products only for all similar items.
- .3 Manufacturer's Listed:
- .1 Hinges
- .1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .2 Continuous Hinges
- .1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .3 Locks
- .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .4 Exit Devices
- .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .5 Closers
- .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .6 Power Operators

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 7 of 41

- .1 Besam - ASSA ABLOY Entrance Systems 4020B Sladeview Crescent.  
Units 3&4 Ontario, L5L 6B1
- .7 Flush Bolts
  - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions  
Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .8 Overhead Stops
  - .1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four  
Valley Drive, Vaughan, Ontario, L4H 4T9.
- .9 Flatware
  - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions  
Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .10 Floor/Wall Stops
  - .1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions  
Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.
- .11 Weatherstrip/Thresholds
  - .1 Pemko – ASSA ABLOY Door Security Solutions Canada, 160 Four  
Valley Drive, Vaughan, Ontario, L4H 4T9.
- .12 Key Cabinet
  - .1 Telkee, 60 Starlifter Ave. Dover Delaware 19901-9254.
- .13 Power Supplies
  - .1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four  
Valley Drive, Vaughan Ontario, L4H 4T9.
- .14 Electric Strikes
  - .1 HESS – ASSA ABLOY Door Security Solutions Canada, 160 Four  
Valley Drive, Vaughan Ontario, L4H 4T9.

## 2.2 DOOR HARDWARE

- .1 All fasteners to come complete with the hardware as described. Hardware supplier must be Advised immediately if required fasteners are not enclosed with hardware.
- .2 Hardware must be installed with fasteners supplied by the manufacturer.
- .3 Hinges Butts and hinges: to ANSI/BMHA A156.1, as listed in Hardware Schedule.
  - .1 Non removable pins (NRP) for all exterior and out swinging secure doors.
  - .2 Exterior hinges and hinges in wet areas of stainless steel, brass or bronze.
  - .3 Interior hinges of plated steel, unless otherwise noted.
  - .4 Size and quantity to be as the manufacturers hinge selection guide.
  - .5 Unless otherwise scheduled, supply (1) hinge for every 762mm of door height.
  - .6 The width of hinges shall be sufficient to clear all trim.
  - .7 All hinges to be five-knuckle design and ball bearing.
  - .8 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.
  - .9 Finish to Dull Chrome 26D.
  - .10 Standard of Acceptance:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 8 of 41

- |    |                 |                       |                |
|----|-----------------|-----------------------|----------------|
| .1 | Specified       | Acceptable Alternates |                |
| .2 | <u>McKinney</u> | <u>Hager</u>          | <u>Stanley</u> |
| .3 | TA2714          | BB1279                | FBB179         |
| .4 | TA2314          | BB1191                | FBB191         |
| .5 | TA3786          | BB1168                | FBB168         |
| .6 | TA3386          | BB11699               | FBB199         |
- .4 Continuous Geared Hinges: to ANSI/BMHA A156.26.
- .1 Provide continuous hinges of the type and style noted in the Hardware legend.
- .2 To be non-handed and completely reversible.
- .3 Material: Extruded tempered aluminium.
- .4 Material Standard: 6063-T6 Alloy.
- .5 Configuration: Three interlocking extrusions in pinless assembly, installed to full height of door.
- .6 Type: Full Mortise: 45mm for extra heavy duty weights.
- .7 Length: Full height less 25mm.
- .8 Strength: Heavy Duty – 27 bearings each leaf for 2108mm, minimum door weight 245 kg.
- .9 Mortise Fasteners: TEK, #12 x 3/4" inch, FHUC, Philips head screws.
- .10 Size to suite door height complete with installation aids and fasteners to suit door an frame conditions.
- .11 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.
- .12 Finish to Anodized Aluminum US28.
- .13 Standard of Acceptance:
- |    |                 |                       |                      |
|----|-----------------|-----------------------|----------------------|
| .1 | Specified       | Acceptable Alternates |                      |
| .2 | <u>McKinney</u> | <u>Pemko</u>          | <u>Hager (Roton)</u> |
| .3 | MCK-12HD        | CFM83SLFHD            | 780-112HD            |
- .5 Tubular Locksets, Grade 1 (Extra-Heavy Duty): ANSI/BHMA A156.2 Series 4000, Grade 1 certified.
- .1 Locksets to withstand 3000 inch pounds of torque applied to the locked lever without gaining access.
- .2 Locksets to fit a standard 2 1/8" bore without the use of through-bolts.
- .3 Lever handles to be made of solid material with no plastic fillers.
- .4 Latchbolt head to be one-piece stainless steel construction encased within the lock body.
- .5 Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA A156.2 requirements to 20 million cycles
- .6 Furnish with standard 2 3/4" backset and 1/2" throw latchbolt (3/4" at rated paired openings).
- .7 Standard of Acceptance:
- |    |                |                       |                |
|----|----------------|-----------------------|----------------|
| .1 | Specified      | Acceptable Alternates |                |
| .2 | <u>Sargent</u> | <u>Corbin</u>         | <u>Schlage</u> |

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 9 of 41

- .3      10X Series      CL3100X
- .6      Mortise locks and latches: to ANSI/BMHA A156.13, Series 1000 mortise lock, grade 1, designed for function as stated in Hardware Schedule.
- .1      Locks shall meet or exceed the requirements of ANSI/BHMA A156.13 Series 1000, Operational Grade 1, and Security Grade 1 with all standard trims.
- .2      Meets or exceeds impact requirements of ASTM F1577-95b Detention Locks for Swinging Doors.
- .3      Locks shall be easily re-handed without opening the lock body.
- .4      Multi-functional lock body to make it easy to change functions in the field.
- .5      Locks shall comply with UL10C and UBC.
- .6      Construction: Lock functions shall be manufactured in a single-sized case formed from 2.6mm steel minimum.
- .7      Locks shall have field adjustable, beveled, armored front, with a 3mm thickness minimum.
- .8      Locks shall have a one piece, 19mm throw anti-friction stainless steel latch.
- .9      Deadbolts, where specified, shall be full one-inch 25mm throw made of one-piece hardened stainless steel.
- .10     Locks shall have a 70mm backset, standard.
- .11     Electrical functions Fail Safe and Fail Secure, Voltage 12VDC or 24VDC Regulated. Full wave rectification installed inside the lockbody. Current .25 at 24VDC and .5 at 12VDC. UL and CUL listed for use on fire doors. Operating temperature: Max 66 (C) degrees and Min. -35(C) degrees.
- .12     Strikes shall be non-handed with a curved lip. Strikes for pairs of doors to be supplied with short lip strike (82-0229). Not to extend beyond the face of the door.
- .13     To ensure proper alignment, trim, knobs or levers, shall be through-bolted and fully interchangeable between rose and escutcheon.
- .14     Lever handles: "LNL" design.
- .15     Roses: round.
- .16     Finished to 26D.
- .17     Standard of Acceptance:
- |    |                |                       |             |
|----|----------------|-----------------------|-------------|
| .1 | Specified      | Acceptable Alternates |             |
| .2 | <u>Sargent</u> | <u>Corbin</u>         | <u>Yale</u> |
| .3 | 8200 – Series  | ML2200                | 8800        |
- .7      Exit Devices: to ANSI/BMHA A156.3, Grade 1.
- .1      Modern touch pad type, fabricated of brass, bronze, stainless steel or aluminum.
- .2      UL listed for Accident Hazard or Fire Exit Hardware as required.
- .3      Hex key dogging standard on non fire-rated exit devices. Cylinder dogging where specified.
- .4      Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be ULC labeled fire exit hardware.
- .5      Include all electrified functions as specified.
- .6      Device Length as per manufacturer's guidelines.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 10 of 41

- .7 The design of the exit device shall eliminate the necessity of removing the device from the door for standard maintenance or keying changes.
- .8 Trim as specified shall be through-bolted.
- .9 All vertical rod in pairs to be less bottom rod where noted.
- .10 Extension rods are required as per manufacturer's requirements.
- .11 Electronic exit devices to have Linx quick connectors (QC).
- .12 Exit devices to suite doors over 45mm where required.
- .13 Standard of acceptance:
- | .1 | Specified      | Acceptable Alternates |
|----|----------------|-----------------------|
| .2 | <u>Sargent</u> | <u>Corbin</u>         |
| .3 | 8800 - Series  | ED5200                |
| .4 | 8700 - Series  | ED5400                |
| .5 | 8600 - Series  | ED5800                |
| .6 | 8500 - Series  | ED4200                |
| .7 | 8400 - Series  | ED4800                |
- .8 Door controls (closers): to ANSI/BMHA A156.4 as listed in Hardware Schedule.
- .1 Modern type, surface applied.
- .2 All closers for both interior and exterior doors shall be the product of one manufacturer and be matched in style.
- .3 Surface closers shall be adjustable to provide sizes 1 through 6 and comply with ADA.
- .4 Full rack and pinion construction.
- .5 Closing speed, latching speed and backcheck shall be controlled by key operated valves.
- .6 Captivated valves.
- .7 Delayed action feature shall be available and controlled by a separate valve.
- .8 Delayed action shall be available in addition to, not in lieu of, backcheck.
- .9 The one piece closer body shall be of die cast aluminum alloy with 14% silicon minimum content. An increase of 15% in closing power shall be provided by means of adjustment of the arm leverage at the foot connection. (Standard Arm).
- .10 All arms shall be finely finished with heavy duty forged steel main arm.
- .11 Two mounting positions of the closer shall meet all requirements. Standard mountings shall provide 120° door opening and alternate mounting 180° door opening.
- .12 All closers shall be suitable for standard, top jamb, parallel arm and track type applications when provided with proper brackets and arms.
- .13 Closer covers shall be of high impact plastic material of flame retardant grade.
- .14 Secured by machine screws.
- .15 Spring power shall be continuously adjustable over the full range of closer sizes and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be tamper proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and backcheck.
- .16 All closer to have a forged steel main arm and forged forearm for parallel arm closers.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 11 of 41

- .17 Finish to Aluminum 689.
- .18 Standard of acceptance:
- |    |                |                        |               |  |
|----|----------------|------------------------|---------------|--|
| .1 | Specified      | Acceptable Alternates: |               |  |
| .2 | <u>Sargent</u> | <u>Norton</u>          | <u>Corbin</u> |  |
| .3 | 1431           | 8500                   | DC6200        |  |
| .4 | 351            | 7500                   | DC3000        |  |
| .5 | 422            | 2800ST                 | DC5000        |  |
- .9 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule, finished to stainless steel 32D.
- .1 Door protection plates: kickplates type, 1.3 mm thick stainless steel, 203mm high, unbevelled edges, width less 40mm push side, width less 25mm on pull side for single doors. Width less 25mm for pairs. Finished to stainless steel 630.
- .1 Standard of acceptance:
- |    |                 |                       |             |              |
|----|-----------------|-----------------------|-------------|--------------|
| .1 | Specified       | Acceptable Alternates |             |              |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> | <u>Hager</u> |
| .3 | K1050           | K10A                  | 8400        | 190S         |
- .2 Push plates: 1.3 mm thick stainless steel, size 89mm x 381mm, finished to stainless steel 630.
- .1 Standard of acceptance:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 70RC            | K14A                  | 8200RC      |  |
- .3 Door Pulls: 19mm round pull, 228.6mm center to center pulls, with 76mm x 305mm protection plate, mount type 1, finished to stainless steel 630.
- .1 Standard of acceptance:
- |    |                 |                       |             |  |
|----|-----------------|-----------------------|-------------|--|
| .1 | Specified       | Acceptable Alternates |             |  |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> |  |
| .3 | 111 x 73CL      | K14 x 2409-1(RC)      | 8303        |  |
- .4 Door Pulls: 32mm Round Offset Pull, mount type 1, 1220mm center to center, mounting to be with a security bolt (#4B) for single application and (#5) for back to back, finished to stainless steel 630.
- .1 Standard of acceptance: Standard Metal D-352 x Mnt.
- |    |                 |                       |             |            |
|----|-----------------|-----------------------|-------------|------------|
| .1 | Specified       | Acceptable Alternates |             |            |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> | <u>Ives</u> | <u>CBH</u> |
| .3 | BF159           | 3018-2                | 8190-18     | 2018-1     |
- .10 Door controls - overhead stop: to ANSI/BMHA A156.8, heavy duty construction, BHMA Grade 1 Certified, heavy duty architectural bronze construction.
- .1 UL Classified: The 590 and 690 stops are UL 10B and UL 10C classified as miscellaneous fire door accessories.
- .2 Corrosion resistance: Brass construction provides corrosion resistance in a variety of conditions.
- .3 Holder Selector: 590 and 690 series holders are equipped with a turn knob to activate and deactivate the hold open function

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 12 of 41

- .4 Thru bolts capture channel and end caps.
- .5 Heavy duty shock spring absorbs load and gradually stops door.
- .6 Blade shim required for all Aluminum Doors.
- .7 Sized as per manufacturer's guidelines. Take into account other hardware mounted on doors.
- .8 Finishes
- .1 Exterior to stainless steel, 26D.
- .2 Interior to steel sprayed finish, EN.
- .9 Standard of acceptance:
- |    |                |                       |
|----|----------------|-----------------------|
| .1 | Specified      | Acceptable Alternates |
| .2 | <u>Rixson</u>  | <u>Sargent</u>        |
| .3 | #1 (Concealed) | 690                   |
| .4 | #9 (Surface)   | 590                   |
| .5 | #2 (Concealed) | 1530                  |
| .6 | #10 (Surface)  | 1540                  |
- .11 Door Stops and Holders and Auxiliary hardware: to ANSI/BMHA A156.16 designated by letter L and numeral identifiers as listed in Hardware Schedule finished to 26D.
- .1 Floor stops dome style classification. Low dome or High dome. Die cast brass. Stops to be sized according to door clearances, thresholds or undercuts as noted in the Door Schedule. Fasteners to suite floor conditions.
- .1 Standard of acceptance:
- |    |                 |                                   |
|----|-----------------|-----------------------------------|
| .1 | Specified       | Acceptable Alternates             |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> <u>Ives</u> |
| .3 | 441             | S101                      FS13    |
| .4 | 443             | S103                      FS17    |
| .5 | 483             | S110                      FS441   |
- .2 Wall stops classification, convex or concave, cast brass or bronze. Fasteners to suite wall conditions.
- .1 Standard of acceptance:
- |    |                 |                                   |
|----|-----------------|-----------------------------------|
| .1 | Specified       | Acceptable Alternates             |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> <u>Ives</u> |
| .3 | 406             | S121                      WS406CV |
| .4 | 409             | S123                      WS406CC |
- .3 Flush Bolts classification. Meets ANSI/BMHA A156.16. Bolt tip is 13mm Diameter with 19mm throw and bolt backset of 19mm. To be supplied with F68 Dust Proof Strike.
- .1 Wood doors
- .1 Standard of acceptance: DCI 790.
- .2 Metal Doors
- .1 Standard of acceptance: Standard Metal F65.
- .3 Standard of acceptance:
- |    |                 |  |
|----|-----------------|--|
| .1 | Specified       | Acceptable Alternates                        |
| .2 | <u>Rockwood</u> | <u>Standard Metal</u> <u>DCI</u> <u>Ives</u> |

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 13 of 41

.3	557		790	FB358
.4	555	F65	780	FB458
.5	570	F68	80	DP2
.6	2842	840	840	FB31
.7	2845	940	940	FB51

- .12 Power assist and low energy power operated doors: to ANSI/BMHA A156.19.
- .1 Automatic operators shall be complete with all components including Operator Housing, Power Operator, Electronic Control, Soft Start, Switching Networks and all Connecting Hardware.
  - .2 Size and type to be as indicated in Hardware Groups.
  - .3 Operator Housing shall be complete with finished end caps prepared for mounting to door frame.
  - .4 Operator shall be factory assembled with all necessary components for proper operation and switching. Relays, wiring harness and other components shall be plug-in type.
  - .5 Operator controls shall include adjustable time delay, safe-swing circuit as well as provision for accessories as detailed in Hardware Groups.
  - .6 All wiring shall be of the shielded type with proper number of conductor wires to install all components specified.
  - .7 Operator shall include sufficient power supplies to operate all hardware and accessory items as detailed in Hardware groups. In the event additional power supplies are required it shall be added at no increase in contract price.
  - .8 Complete unit shall be mounted with provisions for easy servicing or replacement without removing the door or frame.
  - .9 Confirm frame detail and if necessary provide a suitable mounting plate to install operator properly.
  - .10 Standard of acceptance:
 

.1	Specified	Acceptable Alternates	
.2	<u>Besam</u>	<u>Stanley</u>	<u>Horton</u>
.3	SW200i	Magic Force	4100L
.4	SW100i	Magic Access	7100L
- .13 Thresholds and Weatherstripping Thresholds: to ANSI/BMHA A156.21.
- .1 Saddle threshold 152.4 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC.
  - .2 Panic threshold 93.7 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert.
  - .3 Standard of acceptance:
 

.1	Specified	Acceptable Alternates	
.2	<u>PEMKO</u>	<u>KN Crowder</u>	<u>Hager</u>
.3	179AP	CT-39P	552W
.4	252 x 3AFG	CT45A	421S
.5	251 x 226AFG	CT49A	515S
- .14 Door Gasketing and Edge Seal Systems: to ANSI/BMHA A156.22.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 14 of 41

- .1 Head and Jamb seal:
- .1 Extruded aluminum frame and neoprene insert, clear anodized finish.
- .2 Surface overhead stops and exit device strikes to mount on top of weatherstrip to provide continuous seal.
- .3 Adhesive backed black “Santoprene” to provide smoke, light and sound control. Fire labeled 1 1/2hrs.
- .4 Standard of acceptance:
- | .1 | Specified    | Acceptable Alternates |       |
|----|--------------|-----------------------|-------|
| .2 | <u>PEMKO</u> | KN Crowder            | Hager |
| .3 | 319S         | W-14S                 | 878S  |
| .4 | 290APK       | W20N                  | 881S  |
| .5 | 2891AS       | W20S                  | 881S  |
| .6 | S88B         | W22                   | 726S  |
| .7 | 288B         | W21                   | 726S  |
- .2 Door bottom seal:
- .1 Extruded Aluminum frame and nylon brush sweep, clear anodized finish.
- .2 Heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open, clear anodized finish.
- .3 Standard of acceptance:
- | .1 | Specified    | Acceptable Alternates |       |
|----|--------------|-----------------------|-------|
| .2 | <u>PEMKO</u> | KN Crowder            | Hager |
| .3 | 3452CNB      | W35-1                 | 770SB |
| .4 | 18100CNB     | W24S                  | 801SB |
| .5 | 4301         | CT-52                 | 747S  |
- .3 Astragal:
- .1 Flat overlapping extruded aluminum by door height with pile insert.
- .2 Meeting astragal extruded aluminum frame with brush insert by each door by door height, clear anodized finish.
- .3 Standard of acceptance:
- | .1 | Specified    | Acceptable Alternates |       |
|----|--------------|-----------------------|-------|
| .2 | <u>PEMKO</u> | KN Crowder            | Hager |
| .3 | 357CS        | W8S                   | 835S  |
| .4 | 18061CNB     | W-25S                 | 802SB |
| .5 | 3672A        | W8P                   | 835   |
- .15 Access Control Software.
- .1 Server Software
- .1 The Server Software may be either installed on a standard pc running Microsoft Windows 7 Home or Higher (Windows 7 Starter Not Supported) or purchased via an embedded hardware server box.
- .2 The software shall support Microsoft SQL Server 2008 or SQL Server 2008 Express or newer.
- .3 Software may be purchased outright or paid for on a subscription basis.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 15 of 41

- .4 Software shall be 100% web based and can be accessed via any web enabled device including Cell Phones, Tablets, Laptops, P.C.'s etc. without the need for any additional plug in's, i.e. no active x controls etc.
- .5 It shall be possible to select any function, within a given operators permission, independent of the currently displayed screen.
- .6 Functions will be accessed via tool bar Icons, which will include Help prompts that will appear when the mouse pointer dwells on the selection button.
- .2 Administration Software Features
  - .1 Unlimited Access Privilege Groups, Assign as many access rules to each user as required, there is no limit.
  - .2 Unlimited Administrators; Define as many administrators the your system requires, no limit.
  - .3 Role based administrator security; Initial version supports 2 roles (basic admin, sys admin(root)).
  - .4 Dual Edit Modes; Simple/Advanced Edit modes for records allowing quick access to edit complex settings for more advanced users or simple guided edit for general users.
  - .5 Real time notification and status (or close to) support that automatically uses the best available solution for your browser. Also forward compatible with future web sockets implementations once server support is widely available (eta 2013)
  - .6 Multiple Supported Card Formats; Seamless integration to systems already in place allowing multiple cards from other vendors to work on the same readers, ie HID, AWID, HARTANN....., 26Bit,40bit,36bit....
  - .7 Unlimited Customizable user fields; Add as many user fields as required, ie parking number, employee number, phone number ...
  - .8 Automatic database backup; System automatically backs up entire system configuration and logs with no user intervention.
  - .9 Coordinated Universal Time; Automatic time correction according to the panel's Coordinated Universal Time zone and time offset tolerance(configurable)
  - .10 Daylight Saving Time; Automatic Daylight Saving Time (configurable).
  - .11 Security Level Lock Down; Support emergency code (Orange, Red...) by using the multiple user security level(configurable).
  - .12 Unlimited Remote Buildings supported from one single server installation.
  - .13 Unlimited Doors support.
  - .14 Unlimited Cardholders; Maximum number of users the system will support for entry control is limited by panel used only, this could be via proximity card, biometric reader, magstripe card, smart card etc.
  - .15 Unlimited Access Privilege Rules; Rules to define what door a user has access to and at what times he is allowed access.
  - .16 Unlimited Door Time Zones; These are used for programming when doors will unlock and at what time cards will be granted access via locked door.

**Memorial University of Newfoundland**  
**Canada Games Facilities Upgrade**  
**MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 16 of 41

- .17 Graphical Time Zones.
  - .1 The system must have separate time zones for user access as well as door schedules.
  - .2 The system time zones shall be drag and drop graphics allowing for easy viewing, as well as eliminating the chance of programming error.
  - .3 User time zones will support not allowed and allowed schedules
  - .4 Door time zones shall support the following modes
  - .5 Lockdown (no cards other than cards flagged as master will be granted access)
  - .6 Card Only (valid cards required to grant access)
  - .7 Pin Only (valid pins required to grant access)
  - .8 Card Or Pin (valid card or pin required for access)
  - .9 Unlock (door is in public mode)
  - .10 First Credential in (door will not follow its public schedule until a card flagged with first card in feature is presented at the door during the public schedule)
  - .11 Dual Credential (2 valid cards one flagged as supervisor required to grant access)
- .18 Unlimited Special Event Time Zones (single zone) ; Program doors to follow unique schedules on special dates, ie an event where you would like certain doors to stay public from 5pm to 8pm.
- .19 Transparent Multi Site Control; Remote buildings seamlessly via one Server. Add cards to multiple buildings and doors instantly by assigning them to predefined access privilege groups.
- .20 Unlimited System Users; Program as many users with unique logons for system administration or control.
- .21 Manual Override Override - Panels, Doors, Auxiliary relays, Inputs/Outputs, Elevators.
- .22 Block loading/CSV importing cards Load groups of cards with a single press of a button.
- .23 Assa Abloy Aperio Integration System integrates seamlessly with all Aperio hardware including wireless cabinet locks utilizing Aperio RS485 Hub with a one to many connection.
- .24 Alarm Integration; Program select users to enable/disable alarm panels via triple swipe actions at door readers.
- .25 Auto firmware update utility; Server will automatically flash any number and mix of panels (ODM, ODM-WIFI, TDM) seamlessly without any user interaction. Firmware flashed in less than one minute
- .26 Automatic door opener integration; Have selected cards activate both locks and door openers, excellent feature for Handicap persons
- .27 User profile pictures on event notifications; Any events generated by user can be accompanied by their picture
- .28 Triple Swipe Special Function; Allow certain users to perform various actions by triple swiping at keypad and entering code (up to 5 different actions can be programed).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 17 of 41

- .29 Integrated backup restore utility; Intuitive utility allowing for full backups of entire system
  - .30 Dual credential access; Program high security doors to require supervisor as well as another valid card before allowing access, great for any door or cabinet that protects assets.
  - .31 One time run time zones; Rather than overriding a door and forgetting to set back to normal just set a one time run time zone to for example unlock a door at a certain time, great for board meetings etc.
  - .32 Event Emailing Fully configurable email engine keeps administrators in the loop no matter where they are.
  - .33 Totally configurable live event screen Select what events you are interested in monitoring real time as well as which event you want emailed
  - .34 Generic Alarm Panel Interface Option; The system shall have the ability to program special cardholders to arm/disarm an alarm panel via swiping their card 3 consecutive time at specified readers. If the alarm system is armed only those cards having the alarm interface feature will be allowed access through secured doors. Doors can be excluded from this feature if needed. The system shall monitor a status output from the alarm panel and show visual status that alarm panel is armed at readers. As well as beep readers during arming and disarming of alarm panel to notify users of state change.
- .3 Hardware Requirements
- .1 Controllers.
    - .1 The system shall support multiple controllers including, single door with or without built in REX, 2 door controller, wireless single door controller with or without built in REX, Aperio RS485 integration controllers.
    - .2 Communication to all controllers must utilize the existing LAN or WAN
    - .3 Communication speed to controllers shall be at least 100 Mbps
  - .2 Distributed Intelligence. The System selected will utilize distributed intelligent controllers capable of maintaining their normal operation even when off-line from the System's host computer. These controllers being of modular design to easily facilitate future expansion subsequent to the initial installation of the System. Optional hardware being included for units required to supervise monitoring alarm inputs or perform output switching functions. When operated off-line the ability to perform all normal access decisions, including if a cardholder is valid at that door and at that time, along with PIN checking is a requirement. All transactions will be time and date stamped (including seconds) by the controller at the time they occur with this information being the reference used by the System's central History log. Controller clocks will be periodically synchronized System wide
  - .3 Door Controller Specification
    - .1 Unlimited Number of Door Time Zones; Unlimited number of Door Time Zone schedules the system will support. These are used for programming when doors will lock/unlock or grant credential access based on mode (Card Only, PIN Only, Card

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 18 of 41

- and PIN, Card or PIN, First Card In, Dual Credential, Lockdown).
- .2 User Time Zones; Up to 256 User Time Zone schedules the system will support. These are used for programming when and at what time cards will be granted access via locked door.
  - .3 Holiday User Groups; A card user can follow one of the 50 Holiday Group setting.
  - .4 Holidays Per Group; Each group supports up to 50 holidays.
  - .5 Zones per Door Time Zone; 20 door time zones per day.
  - .6 Zones per User Time Zone (holidays) ; 4 user time zones per day.
  - .7 Zones per Door Time Zone (holiday) ; 2 door holiday time zones per day.
  - .8 Zones per User Time Zone (holiday) ; 2 user holiday time zones per day.
  - .9 Special Event Time Zones (single zone) ; Up to 32 One-Time-Run Time Zones available to program doors to follow unique schedules on special dates (ie: an event that you would like certain doors to stay public from 5pm to 8pm instead of being locked).
  - .10 Panel Buffer Event Storage; In an event of network failure, the panel will store the least 50,000 events in buffer for later retrieval once network connection to server is re-established.
  - .11 Multiple Reader Technologies; Supports proximity, biometrics, Wiegand, mag stripes and barcode reader technology.
  - .12 First Person In; Program to follow their public schedule only after a valid card has been presented (ie: in the case of a snow day the doors do not go public before someone is in the building).
  - .13 Triple-Swipe Mode; Activate multiple actions by triple swipes from a keypad-reader (configurable).
  - .14 16-Bit Site Code; Supports 1 ~ 65535
  - .15 32-Bit Card Number; Supports 0 ~ 4294967295
  - .16 Hold Name String; Stores up to 30 characters of each users name on-board.
  - .17 PIN Number; Supports 3 ~ 7 digits
  - .18 Start Date, Expire Date; Ability to define a credential active date range. Ideal for temporary and contract employees.
  - .19 Configurable Software Filter for Back-to-Back Reader Interference; Allowed tuning for readers that are close to one another.
  - .20 Remote Firmware Upgradable; Managed automatically by the software - no user intervention required.
  - .21 Multi-run Modes for Simplified Trouble-Shooting; Normal, Debug, Diagnose

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 19 of 41

- .22 On-Board UI; Easy check and/or change most parameter values on the panel through on-board push button keys, LEDs, and audible beep.
- .23 Password Protection; Changing parameter values are protected by a password.
- .24 Output Port (fully configurable) ; Door Strike, Door Opener, External Buzzer, Alarm Interface, Aux Output
- .25 Input Port (fully configurable) ; Request to Exit, Door Contact, Handicap Open, Motion, Aux Input, Emergency Alarm.
- .26 PIN Blocking; Five consecutive incorrect PIN entry blocks PIN input for 30 sec with buzzer sound warning.
- .4 Door Controller Physical Specifications
  - .1 32-Bit Microprocessor-Based
  - .2 Power over Ethernet IEEE 802.3af PoE standard provides up to 15.4 Watts.
  - .3 DC 12V power output for motion or other devices
  - .4 Output Port (fully configurable) Lock relay - supply power (12V, 500mA) to the lock, over current protection, SSR Relay2, SSR Relay3 - 60V (TVS circuit limits 24V), 500mA, fully configurable, no mechanical ports.
  - .5 Input Ports Fully configurable including supervised or digital input setting, includes door contact, exit button, external request to exit motion etc.
  - .6 Tamper Sensor Photo tamper sensor (configurable)
  - .7 Readers Ports 2 ports, hardware data monitoring LEDs, configurable reader port mapping (Example: Reader-Port1 maps to Door1-Outside.)
  - .8 Network 10/100Mbps supporting Static or DHCP
  - .9 Displays 2 Line x 16 Ch LCD Display (contrast adjustable) with LED back light (brightness adjustable) 4 user LED's, 2 power LED's, 3 relay output indication LED's, 2 Ethernet status LED's
  - .10 Keyboard Four user push buttons for data entry or output selection.
  - .11 Time Keeps up to 1 month without power connection. No battery needed.
  - .12 Supports hardware-level emergency alarm interface.
  - .13 Sounder On-board piezo buzzer (90dB at 10cm), Optional loud buzzer (100dB at 100 cm)
  - .14 Multi-purpose Expansion Port Supports WiFi, serial, extra memory, I/Os .. (for future expansions)
- .5 System must have the capability to fully integrate to the ASSA Abloy Aperio Wireless lock system. This integration must have the ability to interface with 8 Aperio wireless locks at a time through one interface device.
- .6 Standard of acceptance:

**Memorial University of Newfoundland  
 Canada Games Facilities Upgrade  
 MUN File: AQ-004-19**

.7	<u>Specified</u>	<u>Acceptable Alternates</u>
.8	Millennium	None

.16 Electric Strikes.

.1 Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

.1 Standard of acceptance:

.1	<u>Specified</u>	<u>Acceptable Alternates</u>
.2	<u>HES</u>	<u>RCI</u>
.3	5200	S6514
.4	1006/1600/1500	F2164
.5	9500	F0162
.6	9600	0162

.17 Power Supplies:

- .1 Dual output, field selectable 12 or 24 VDC via clearly marked toggle switch.
- .2 Supplies 1 full AMP continuous current output, even while charging back-up batteries.
- .3 SPDT AC monitoring output allows for remote monitoring of the power supply's 110V AC input.
- .4 Separate voltage inputs for load and battery allow the batteries to charge at a higher output while the load remains at exactly 12 or 24 VDC.
- .5 LED indication (AC & DC) showing power supply status UL listed low current fire alarm disconnect requires only a minimum size fire alarm relay and wire gauge Polyswitch type breakers allow for large short duration inrush current if batteries are installed (approx. 20A for 1 second) Line voltage and DC fuses Sealed lead acid-gel battery charging capability (battery not included).
- .6 UL Class 2, linear regulated power supply provides the cleanest power available sensitive, active safety and security devices.
- .7 UL Listed.
- .8 CFAR Relay - Securitron's Fire Alarm reset module interconnects with a Securitron BPS series power supply and a fire alarm (made by others). The purpose is to provide additional safety and control in an installation where activation of the fire alarm is intended to switch off the BPS power supply.
- .9 This is often done to release power to magnetic locks which are installed on perimeter doors so as to permit safe evacuation in the event of a fire. The module has three specific functions:
  - .1 It will maintain the released condition of devices released by activation of the fire alarm even after the fire alarm resets and until the module itself is reset by key.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 21 of 41

- .2 It allows key controlled release of the same devices (separate from the fire alarm control).
- .3 It signals the released or “normal” condition of the devices via a bicolor LED.
- .10 Standard of acceptance:
  - .1 Specified Acceptable Alternates
  - .2 Securitron Sargent
  - .3 BPS 3500
- .18 Power Transfer Devices:
  - .1 Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
  - .2 Standard of acceptance:
    - .1 Specified Acceptable Alternates
    - .2 Securitron Pemko
    - .3 EL-CEPT EL-CEPT
- .19 Electric Door Wire Harnesses:
  - .1 Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
  - .2 Standard of acceptance:
    - .1 Specified Acceptable Alternates
    - .2 McKinney Stanley
    - .3 QC-C Series WH Series
- .20 Key Switches:
  - .1 Key switches furnished standard with stainless steel single gang face plate.
  - .2 Standard with 12 or 24 VDC bi-color LED
  - .3 Backing bracket permits integration with any 32mm or 28mm mortise cylinder (Not Included)
  - .4 Additional switch position on backing bracket allows another switch to be activated by turning the key in the opposite direction 5 Amp rated plunger switch UL Listed.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 22 of 41

- .5 Key switches available as momentary or maintained action and in narrow face plate options.
- .6 Standard of acceptance:
  - .1 Specified Acceptable Alternates
  - .2 Securitron Security Door Controls
  - .3 MK Series 800 Series
- .21 Door Status Switch:
  - .1 Monitors door position remotely.
  - .2 SPDT concealed switch (3 wire).
  - .3 Contacts rated .25 Amp @24 VDC, requires 25mm diameter hole.
  - .4 Standard of acceptance:
    - .1 Specified Acceptable Alternates
    - .2 Securitron Sargent
    - .3 DPS W/M 3287

### 2.3 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Use fasteners compatible with material through which they pass.

### 2.4 FINISHES

.1	<u>Description</u>	<u>Material</u>	<u>BMHA</u>
.2	Exterior Hinges	Stainless Steel Metal, Satin	630
.3	Interior Hinges	Satin Chromium Plated	626
.4	Locks	Stainless Steel Metal, Satin	630
.5	Exit Devices	Satin Chromium Plated	626
.6	Closers	Aluminum Powder Coated	689
.7	Flatware	Stainless Steel Metal, Satin	630
.8	All other items	Satin Chromium Plated	626

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 23 of 41

**2.5 KEYING**

- .1 All locks to be master keyed to the existing master key system by Babb's Lock & Safe. All locks to be master keyed as per the owners instructions.
- .2 All cylinders to be Medeco P4.
- .3 Consult with the Architect/Engineer and the owner and secure written approval of the complete keying layout prior to placing lock order with the factory.
- .4 Grand master keys and master keys shall be sent directly to the owner by registered mail, return receipt if requested.
- .5 Supply:
  1. Master keys 5 per group
  2. Change Keys/Lock 4

**2.6 KEY CONTROL**

- .1 Provide a key control system, including envelopes, labels with self-locking clips, receipt forms, 3-way visible card index, temporary markers and permanent markers and standard metal cabinet. Allow for 150% of the number of locks required on the project.
- .2 Provide complete cross index system set up by the Hardware Supplier and place keys on markers and hooks in the key cabinet as determined by the final key schedule.
- .3 Install and give instruction to owner on how the system is to be used.
- .4 Provide hinged-panel type cabinet for wall mounting.
- .5 Standard of acceptance: Lund BH-551-140-3.

**Part 3 Execution****3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Furnish manufacturers' instructions for proper installation of each hardware component.
- .4 Wiring Diagrams: Provide any special information, voltage requirements and wiring diagrams to other trades requiring such information.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

Section 08 71 00 – Door Hardware

Page 24 of 41

---

**3.2           INSTALLATION**

- .1     Install door hardware in accordance with manufacturer's instructions, using special tools and jigs. Fit accurately and apply securely. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.
- .2     Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door Manufacturers' Association.
- .3     Installation is to be done by a qualified tradesman, if technical assistance is required contact the hardware supplier.
- .4     Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .5     Install key control cabinet.
- .6     Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .7     Remove construction cores and locks when directed by Contractor; install permanent cores and check operation of locks.
- .8     Hardware should not be installed until all finishing is complete.
- .9     All hardware to be installed level plumb and true.
- .10    All operating parts to work freely and smoothly.
- .11    Exterior thresholds to be set in exterior sealants.
- .12    Install Power Operators as per manufacturer's instructions and by a qualified installer.
- .13    Access control to be installed by a certified installer.
- .14    High voltage wiring by Division 28. Low voltage wiring by access control supplier.

**3.3           ADJUSTING**

- .1     Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2     Lubricate hardware, operating equipment and other moving parts.
- .3     Adjust door hardware to provide tight fit at contact points with frames.
- .4     All defective or damaged hardware will have to be repaired or replaced at the contractors expense.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 25 of 41

**3.4 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.5 DEMONSTRATION**

- .1 Keying System Setup and Cabinet:
  - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
  - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
  - .3 Lock key cabinet and turn over key to Owner's Representative.
- .2 Maintenance Staff Briefing:
  - .1 Brief maintenance staff regarding:
  - .2 Proper care, cleaning, and general maintenance of projects complete hardware.
  - .3 Description, use, handling, and storage of keys.
  - .4 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.
  - .5 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

**3.6 FIELD QUALITY CONTROL**

- .1 An inspection report will be required 6 months after substantial completion by a qualified Architectural Hardware Consultant to note any deficiencies. The inspection should include checking each lock against the key schedule to make sure the correct locks and cylinders are on the proper doors.

**3.7 PROTECTION**

- .1 Protection must be given to all products and finishes until such time as the owner accepts the project.

**3.8 CERTIFICATION**

- .1 After installation, Hardware Supplier is to have a regular member of the Architectural Hardware Consultants' (AHC) Association inspect and certify in writing that all items and their installations are in accordance with specified requirements.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 26 of 41

**3.9 DOOR HARDWARE SETS**

- .1 The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- .2 The supplier is responsible for handing and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.
- .3 Products listed in the Door Hardware Sets must meet the requirements described in the specification sections noted.

**3.10 HARDWARE SCHEDULE****Set: 1.0**

Single 2006B, 969 x 2135 x 45, Aluminum x Existing,  
 Single 2007D, 969 x 2135 x 45, Aluminum x Existing,  
 Single 2017A, 915 x 2135 x 45, Existing x Existing,  
 Single 2017B, 915 x 2135 x 45, Existing x Existing,

1	Existing	Remainder of Hardware Existing	00
1	Gasketing	S88BL x 3 Sides	PE
1	Sweep	18100CNB x Door Width	PE

Notes:  
 EXISTING SINGLE ALUMINUM DOORS ADD SEALS.

**Set: 2.0**

Pair 2009, 1830 x 2134 x 45, Aluminum x Existing,

1	Existing	Remainder of Hardware Existing	00
1	Gasketing	S773BL x 3 Sides	PE
1	By Aluminum Door Supplier	Weatherstripping	Std 00
2	Sweep	18100CNB x Door Width	PE
2	Astragal	18061CNB x Door Height	PE

Notes:  
 EXISTING DOUBLE ALUMINUM DOORS ADD SEALS.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 27 of 41

**Set: 3.0**

Single 2009C, 915 x 2135 x 45, Hollow Metal x Existing,

1	Existing	Remainder of Hardware Existing	00
1	Gasketing	312CR x 3 Sides	PE
1	Sweep	18100CNB x Door Width	PE

**Notes:**

EXISTING SINGLE HM DOOR ADD SEALS.

**Set: 4.0**

Single X2016, 915 x 2135 x 45, Hollow Metal x Hollow Metal,

1	Continuous Hinge	CFM x Door Height x SLF-HD1	PE
1	Rim Exit Device, Exit Only	8810 EO	US32D SA
1	Surf Overhead Stop	8-336	630 RF
1	Surface Closer	351 P3	EN SA
1	Drop Plate	351D	EN SA
1	Kick Plate	K1050 203mm x 25mm LDW 4BE CSK	US32D RO
1	Threshold	255x5AFG x Door Width	PE
1	Threshold	1842APK x Door Width	PE
1	Threshold	3261A x Door Width + 100mm	PE
1	Gasketing	2891AS x 3 Sides	PE
1	Bracket	BKT050SP	PE
1	Sweep	3452CNB x Door Width	PE

**Notes:**WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.  
MOUNTING BRACKET BKT050SP TO BE USED TO SUPPORT CLOSER FOOT IF REQUIRED.**Set: 5.0**

Pair X2V02, 1830 x 2135 x 45, Hollow Metal x Hollow Metal,

2	Continuous Hinge	CFM x Door Height x SLF-HD1	PE
2	Surface Vert Rod Exit, Classroom	LC 8713 ETL	US32D SA
2	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std MC
1	Surf Overhead Stop	8-336	630 RF
1	Surface Closer	351 P3	EN SA

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 28 of 41

1	Drop Plate	351D	EN	SA
2	Kick Plate	K1050 203mm x 25mm LDW 4BE CSK	US32D	RO
1	Threshold	255x5AFG x Door Width		PE
1	Threshold	1842APK x Door Width		PE
1	Threshold	3261A x Door Width + 100mm		PE
1	Gasketing	2891AS x 3 Sides		PE
1	Gasketing	2891AS x 3 Sides		PE
2	Bracket	BKT050SP		PE
2	Sweep	3452CNB x Door Width		PE
2	Astragal	18061CNB x Door Height		PE

**Notes:**

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.  
MOUNTING BRACKET BKT050SP TO BE USED TO SUPPORT CLOSER FOOT IF REQUIRED.

**Set: 6.0**

Single 3020A, 915 x 2135 x 45, Hollow Metal x Hollow Metal,

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Passage Set	8215 LNL	US26D	SA
1	Surf Overhead Stop	8-336	630	RF
1	Surface Closer	351 P3	EN	SA
1	Drop Plate	351D	EN	SA
1	Threshold	253x3AFG x Door Width		PE
1	Threshold	1842APK x Door Width		PE
1	Gasketing	2891AS x 3 Sides		PE
1	Bracket	BKT050SP		PE
1	Sweep	3452CNB x Door Width		PE

**Notes:**

FOUR SIDED FRAME.

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.  
MOUNTING BRACKET BKT050SP TO BE USED TO SUPPORT CLOSER FOOT IF REQUIRED.

**Set: 7.0**

Single X3020, 915 x 1070 x 45, Hollow Metal x Hollow Metal,

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Security Deadbolt Lock	LC 8249 LNL	US26D	SA
2	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 29 of 41

1	Surf Overhead Hold Open	8-326	630	RF
1	Surface Closer	351 P3	EN	SA
1	Drop Plate	351D	EN	SA
1	Threshold	255x5AFG x Door Width		PE
1	Threshold	1842APK x Door Width		PE
1	Threshold	3261A x Door Width + 100mm		PE
1	Bracket	BKT050SP		PE
1	Gasketing	2891AS x 4 Sides		PE
1	Sweep	3452CNB x Door Width		PE

**Notes:**

WEATHERSEAL NOT TO BE BROKEN. MOUNT HARDWARE TO THE SURFACE OF THE WEATHERSEAL.  
MOUNTING BRACKET BKT050SP TO BE USED TO SUPPORT CLOSER FOOT IF REQUIRED.

**Set: 8.0**

Single 2019, 915 x 2135 x 45, FRP x FRP,  
Single 2020, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2714 114mm x 101mm	US26D	MK
1	Entry/Office Lock	LC 10XG05 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	S773BL x 3 Sides		PE

**Set: 9.0**

Single 2018B, 915 x 2135 x 45, Wood x Hollow Metal,

3	Hinge, Full Mortise	TA2714 114mm x 101mm NRP	US26D	MK
1	Entry/Office Lock	LC 10XG05 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Kick Plate	K1050 203mm x 25mm LDW 4BE CSK	US32D	RO
1	Floor Stop	441H	US26D	RO

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 30 of 41

**Set: 10.0**

Single 1003C, 865 x 2135 x 45, Wood x Existing, 45 min

3	Hinge, Full Mortise	TA2714 114mm x 101mm NRP	US26D	MK
1	Storeroom/Closet Lock	LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surf Overhead Hold Open	55-X26	652	RF
1	Surface Closer	1431 P3	EN	SA
1	Gasketing	S773BL x 3 Sides		PE

Notes: NEW DOOR IN EXISTING FRAME. DOOR TO MATCH EXISTING FRAME HARDWARE LOCATIONS.

**Set: 11.0**

Single 1001, 915 x 2135 x 45, Wood x Hollow Metal, 45 min

3	Hinge, Full Mortise	TA2714 114mm x 101mm	US26D	MK
1	Storeroom/Closet Lock	LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Door Closer	1431 O	EN	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	S773BL x 3 Sides		PE

**Set: 12.0**

Single 3015B, 915 x 2135 x 45, Wood x Hollow Metal,

3	Hinge, Full Mortise	TA2714 114mm x 101mm	US26D	MK
1	Classroom Lock	LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Wall Stop	406 (Convex HD)	US32D	RO

**Set: 13.0**

Single 3015A, 915 x 2135 x 45, Wood x Hollow Metal,

3	Hinge, Full Mortise	TA2714 114mm x 101mm	US26D	MK
1	Classroom Lock	LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x	Std	MC

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 31 of 41

	Babbs Lock & Safe		
1	Conc Overhead Hold Open	5-X26	652 RF

**Set: 14.0**

Single 3014, 915 x 2135 x 45, Wood x Hollow Metal, 45 min

3	Hinge (heavy weight)	T4A3786 114mm x 114mm	US26D MK
1	Classroom Lock	LC 10XG37 LL	US26D SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std MC
1	Surface Closer	2800ST (Pull Side)	689 NO
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D RO
1	Wall Stop	406 (Convex HD)	US32D RO
1	Gasketing	312CR x 3 Sides	PE

**Set: 15.0**

Single 2018, 915 x 2135 x 45, Wood x Hollow Metal,

3	Hinge, Full Mortise	TA2714 114mm x 101mm	US26D MK
1	Classroom Lock	LC 10XG37 LL	US26D SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std MC
1	Surface Closer	2800ST (Pull Side)	689 NO
1	Kick Plate	K1050 203mm x 25mm LDW 4BE CSK	US32D RO
1	Floor Stop	441H	US26D RO
1	Gasketing	312CR x 3 Sides	PE

**Set: 16.0**

Single 2010, 915 x 2135 x 45, Wood x Hollow Metal, 45 min

3	Hinge, Full Mortise	TA2714 114mm x 101mm NRP	US26D MK
1	Classroom Lock	LC 10XG37 LL	US26D SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std MC
1	Surf Overhead Stop	55-X36	652 RF
1	Surface Closer	1431 P3	EN SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D RO

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 32 of 41

1 Gasketing 312CR x 3 Sides PE

**Set: 17.0**

Single 2012A, 915 x 2135 x 45, FRP x FRP,

3	Hinge (heavy weight)	T4A3386 114mm x 114mm NRP	US32D	MK
1	Storeroom/Closet Lock	CPC LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	SMART Pac Bridge Rectifier	2005M3		HS
1	Electric Strike	1500C-LM	630	HS
1	Power Operator	SW200i	Std	BM
1	Mounting Pate	Mounting Plate x Full Header	689	BM
1	Backing Plate	Backing Plate x Full Header	689	BM
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Position Switch	DPS-M-BK		SU
1	Restroom Control Kit	Camden CX-WC13XSM	Std	OT
1	Power Supply	AQD1-4F1		SU
1	Integration Cabinet with Wiring Diagram	Thomas TA-2909-PIK-ATLHW (Elevations & Point to Point))	Std	SA

**Notes:**

POWER OPERATOR ON PULL SIDE BUT BE LOWERED ENOUGH TO NOT INTERFERE WITH THE CONCEALED OVERHEAD STOP.  
REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ILLUMINATED WALL ACTUATOR LOCATIONS.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO WALL ACTUATOR LOCATIONS

**MODE OF OPERATION:**

WHEN THE WASHROOM IS UNOCCUPIED THE FAIL SAFE ELECTRIC STRIKE WILL BE DEACTIVATED AND THE ILLUMINATED PUSH PLATE SWITCHES WILL BE ILLUMINATED "GREEN". ENTRY BY MANUALLY OPENING DOOR OR AUTOMATICALLY BY ACTIVATING THE EXTERIOR ACTUATOR BUTTON. ACTIVATING THE EXTERIOR ACTUATOR BUTTON WILL ACTIVATE THE POWER OPERATOR. WHEN THE WASHROOM IS OCCUPIED THE PUSH TO LOCK BUTTON IS ACTIVATED. ACTIVATING THE PUSH TO LOCK BUTTON WILL CHANGE THE ILLUMINATED FROM GREEN TO RED AND THE ELECTRIC STRIKE WILL ACTIVATE AND BECOME SECURED. ENTRY BY KEY ONLY WHEN THE WASHROOM IS OCCUPIED. THE WASHROOM TO BE EXITED BY MANUALLY OPENING THE DOOR OR AUTOMATICALLY BY ACTIVATING THE ACTUATOR BUTTON. ACTIVATING THE INTERIOR ACTUATOR BUTTON WILL SIMULTANEOUSLY DEACTIVATE THE ELECTRIC STRIKE AND ACTIVATE THE POWER OPERATOR. OPENING THE DOOR MANUALLY OR AUTOMATICALLY WILL DEACTIVATE THE ELECTRIC STRIKE AND THE ILLUMINATED SWITCHES WILL TURN FROM RED TO GREEN. FREE EXIT AT ALL TIMES.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 33 of 41

**Set: 18.0**

Single 2021, 915 x 2135 x 45, FRP x FRP, 45 min

3	Hinge, Full Mortise	TA2314 114mm x 101mm NRP	US32D	MK
1	Passage Latch	CPC 10XU15 LL	US26D	SA
1	Surface Closer	PS2800ST (Push Side) (SRI)	600 x 689	NO
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE

**Set: 19.0**

Single 3020B, 915 x 2135 x 45, Hollow Metal x Hollow Metal,

3	Hinge, Full Mortise	TA2714 114mm x 101mm NRP	US26D	MK
1	Storeroom/Closet Lock	LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	SMART Pac Bridge Rectifier	2005M3		HS
1	Electric Strike	1500C-LM	630	HS
1	Conc Overhead Stop	1-336	652	RF
1	Door Closer	1431 P9	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Frame Wiring ElectroLynx Harness	QC-C2500(P) Use Pins Where Required		MK
1	Position Switch	DPS-M-BK		SU
1	Back Box with Lock	Millennium 060-101025	Std	OT
1	Door Control Device (EDCD)	Millennium 149-100966	Std	OT
1	Prox Card Readers (HID)	Millennium 6005B	Std	OT
1	Power Supply	AQD1-4F1		SU
1	Wiring Diagrams	Wiring Diagrams (Elevations & Point to Point)	Std	SA

**Notes:**

REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES LOW VOLTAGE FROM POWER SUPPLY TO ELECTRIC STRIKE CONTRACTOR.  
REQUIRES LOW VOLTAGE AND COMMUNICATION WIRE BY ELECTRICAL CONTRACTOR.  
REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.  
REQUIRES WIRE AND WIRE PULL BY ELECTRICAL CONTRACTOR.

MODE OF OPERATION:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 34 of 41

CARD ACCESS. DOOR TO BE SECURED BY STOREROOM FUNCTION LOCK AT ALL TIMES. ENTRY BY AUTHORIZED CARD OR KEY. ENTRY BY AUTHORIZED CARD WILL ACTIVATE ELECTRIC STRIKE FOR DOOR TO BE MANUALLY OPENED STANDARD FUNCTIONALITY FOR DOOR CONTACTS AND REQUEST TO EXIT. LOCK HAS MECHANICAL KEY OVERRIDE. FREE EXIT AT ALL TIMES.

**Set: 20.0**

Single 2012, 915 x 2135 x 45, FRP x FRP,  
Single 2013, 915 x 2135 x 45, FRP x FRP,  
Single 2014, 915 x 2135 x 45, FRP x FRP,

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Classroom Deadlock	CPC LC 4877	US26D	SA
1	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Push Pull	111x73RCC/73RCCL (Marine Grade)	US32D- MS	RO
1	Power Operator	SW200i	Std	BM
1	Mounting Pate	Mounting Plate x Full Header	689	BM
1	Backing Plate	Backing Plate x Full Header	689	BM
1	Wall Actuator - 114mm	10BR45 - Wall Mount Actuator	32D	BM
1	Eschutcheon	10ESCUTCHEON45	32D	BM
1	Sensor	Superscan 11 (Push Side)	Std	BM
1	Sensor	Superscan 11 (Pull Side)	Std	BM
1	Switching Network	CX-33	Std	BM
1	Lock Out Relay	LE-21	Std	BE
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Sweep	18100CNB x Door Width		PE

**Set: 21.0**

Single 2016, 915 x 2135 x 45, FRP x FRP,  
Single 3025, 915 x 2135 x 45, FRP x FRP, 45 min

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Rim Exit Device, Classroom	CPC LC 8813 ETL	US32D	SA
1	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surface Closer	PS2800ST (Push Side) (SRI)	600 x 689	NO
1	Kick Plate	K1050 203mm x 50mm LDW 4BE	US32D	RO

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 35 of 41

		CSK		
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Sweep	18100CNB x Door Width		PE

**Set: 22.0**

Single 3C01, 915 x 2135 x 45, FRP x FRP, 45 min

1	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
1	Rim Exit Device, Classroom	CPC 12 LC 8813 ETL	US32D	SA
1	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surface Closer	PS2800ST (Push Side) (SRI)	600 x 689	NO
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Sweep	18100CNB x Door Width		PE

**Set: 23.0**

Pair 2V02, 1830 x 2135 x 45, FRP x FRP,

2	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
2	Push Pull	111x73RCC/73RCCL (Marine Grade)	US32D- MS	RO
2	Surface Closer	2800ST (Pull Side) (SRI)	600 x 689	NO
2	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
2	Sweep	18100CNB x Door Width		PE
2	Astragal	18061CNB x Door Height		PE

**Set: 24.0**

Pair 2V03, 1830 x 2135 x 45, FRP x FRP, 45 min

2	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
2	Concealed Vert Rod Exit, Classroom	CPC 12 LC NB MD8613 ETL x WP (Special - Weep Hole Spar NC-35)	US32D	SA
2	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs	Std	MC

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 36 of 41

		Lock & Safe		
2	Surf Overhead Stop	9-X36	630	RF
2	Surface Closer	1601SS	600 x 689	NO
2	Cover	1600P	689	NO
2	Gasketing	2891AS x 3 Sides		PE
2	Concealed Door Bottom (Wood Doors)	STC411APK x Door Width		PE
2	Sweep	18100CNB x Door Width		PE
2	Astragal	29310CV x Door Height		PE

**Set: 25.0**

Single 2025, 915 x 2135 x 45, FRP x FRP,  
Single 3015, 915 x 2135 x 45, FRP x FRP,  
Single 3016, 915 x 2135 x 45, FRP x FRP,  
Single 3017, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Classroom Lock	CPC LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surface Closer	1601SS	600 x 689	NO
1	Cover	1600P	689	NO
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

**Set: 26.0**

Single 2009A, 915 x 1830 x 45, FRP x FRP,  
Single 2009B, 915 x 1830 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Classroom Lock	CPC LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Floor Stop	441H	US26D	RO

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 37 of 41

**Set: 27.0**

Single 3020D, 915 x 2135 x 45, FRP x FRP,  
Single 3021, 915 x 2135 x 45, FRP x FRP,  
Single 3022, 915 x 2135 x 45, FRP x FRP,  
Single 3023, 915 x 2135 x 45, FRP x FRP,  
Single 3024, 915 x 2135 x 45, FRP x FRP,  
Single 3026, 915 x 2135 x 45, FRP x FRP,  
Single 3027, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2314 114mm x 101mm	US32D	MK
1	Classroom Lock	CPC LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surface Closer	1601SS	600 x 689	NO
1	Cover	1600P	689	NO
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Sweep	18100CNB x Door Width		PE

**Set: 28.0**

Single 2009G, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2314 114mm x 101mm NRP	US32D	MK
1	Classroom Lock	CPC LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surface Closer	P7500SS	600 x 689	NO
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

**Set: 29.0**

Single 2011, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise	TA2314 114mm x 101mm NRP	US32D	MK
1	Classroom Lock	CPC LC 10XG37 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x	Std	MC

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 38 of 41

		Babbs Lock & Safe		
1	Surface Closer	P1601SS	600 x 689	NO
1	Cover	1600P	689	NO
1	Kick Plate	K1050 203mm x 50mm LDW CSK BEV (Marine Grade Stainless)	US32D- 316	RO
1	Gasketing	312CR x 3 Sides		PE

**Set: 30.0**

Single 3020, 1070 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise, Hvy Wt	T4A3386 5" x 4-1/2"	US32D	MK
1	Storeroom/Closet Lock	CPC LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	SMART Pac Bridge Rectifier	2005M3		HS
1	Electric Strike	1500C-LM	630	HS
1	Position Switch	DPS-M-BK		SU
1	Back Box with Lock	Millennium 060-101025	Std	OT
1	Door Control Device (EDCD)	Millennium 149-100966	Std	OT
1	Prox Card Readers (HID)	Millennium 6005B	Std	OT
1	Power Supply	AQD1-4F1		SU
1	Wiring Diagrams	Wiring Diagrams (Elevations & Point to Point)	Std	SA

**Notes:**

REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES LOW VOLTAGE FROM POWER SUPPLY TO ELECTRIC STRIKE LOCATION.  
REQUIRES LOW VOLTAGE WIRE FROM KEY SWITCH TO POWER SUPPLY.  
REQUIRES CONDUIT WITH PULL STRING TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.  
REQUIRES WIRE AND WIRE PULL BY THE ELECTRICAL CONTRACTOR.  
REQUIRES WIRE CHASE IN THE DOOR.

**MODE OF OPERATION:**

CARD ACCESS. DOOR TO BE SECURED BY STOREROOM FUNCTION LOCK AT ALL TIMES.  
ENTRY BY AUTHORIZED CARD OR KEY. ENTRY BY AUTHORIZED CARD WILL ACTIVATE  
ELECTRIC STRIKE FOR DOOR TO BE MANUALLY OPENED STANDARD FUNCTIONALITY  
FOR DOOR CONTACTS AND REQUEST TO EXIT. LOCK HAS MECHANICAL KEY OVERRIDE.  
FREE EXIT AT ALL TIMES.

**Set: 31.0**

Pair 2026, 1320 x 2135 x 45, FRP x FRP,

6	Hinge, Full Mortise	TA2314 114mm x 101mm NRP	US32D	MK
1	Flush Bolt	2805 (Top Bolt Only)	US32D	RO

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 39 of 41

1	Classroom Lock	CPC LC 23 8237 LNL	US26D	SA
2	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Surf Overhead Hold Open	9-X26	630	RF
1	Drop Plate	2888 (Inverted Instalation)	689	NO
1	Surface Closer	PS2800ST (Push Side) (SRI)	600 x 689	NO

**Set: 32.0**

Single 3018, 915 x 2135 x 45, FRP x FRP,  
Single 3019, 915 x 2135 x 45, FRP x FRP,

3	Hinge, Full Mortise, Hvy Wt	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1	Storeroom/Closet Lock	CPC LC 10XG04 LL	US26D	SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	SMART Pac Bridge Rectifier	2005M3		HS
1	Electric Strike	1500C-LM	630	HS
1	Power Operator	SW200i	Std	BM
1	Mounting Pate	Mounting Plate x Full Header	689	BM
1	Backing Plate	Backing Plate x Full Header	689	BM
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Position Switch	DPS-M-BK		SU
1	Restroom Control Kit	Camden CX-WC13XSM	Std	OT
1	Power Supply	AQD1-4F1		SU
1	Integration Cabinet with Wiring Diagram	Thomas TA-2909-PIK-ATLHW (Elevations & Point to Point))	Std	SA

**Notes:**

POWER OPERATOR ON PULL SIDE BUT BE LOWERED ENOUGH TO NOT INTERFERE WITH THE CONCEALED OVERHEAD STOP.  
REQUIRES 120VAC POWER TO POWER OPERATOR LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL CONTRACTOR.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ELECTRIC STRIKE LOCATION.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO ILLUMINATED WALL ACTUATOR LOCATIONS.  
REQUIRES LOW VOLTAGE FROM POWER OPERATOR TO WALL ACTUATOR LOCATIONS

**MODE OF OPERATION:**

WHEN THE WASHROOM IS UNOCCUPIED THE FAIL SAFE ELECTRIC STRIKE WILL BE DEACTIVATED AND THE ILLUMINATED PUSH PLATE SWITCHES WILL BE ILLUMINATED "GREEN". ENTRY BY MANUALLY OPENING DOOR OR AUTOMATICALLY BY ACTIVATING THE EXTERIOR ACTUATOR BUTTON. ACTIVATING THE EXTERIOR ACTUATOR BUTTON WILL ACTIVATE THE POWER OPERATOR. WHEN THE WASHROOM IS OCCUPIED THE PUSH TO LOCK BUTTON IS ACTIVATED. ACTIVATING THE PUSH TO LOCK BUTTON WILL CHANGE THE ILLUMINATED FROM GREEN TO RED AND THE ELECTRIC STRIKE WILL ACTIVATE AND BECOME SECURED. ENTRY BY KEY ONLY WHEN THE WASHROOM IS OCCUPIED. THE WASHROOM TO BE EXITED BY MANUALLY OPENING THE DOOR OR AUTOMATICALLY BY ACTIVATING THE ACTUATOR BUTTON. ACTIVATING THE INTERIOR ACTUATOR BUTTON WILL SIMULTANEOUSLY DEACTIVATE THE ELECTRIC STRIKE AND ACTIVATE THE POWER OPERATOR. OPENING THE DOOR MANUALLY OR

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 40 of 41

AUTOMATICALLY WILL DEACTIVATE THE ELECTRIC STRIKE AND THE ILLUMINATED SWITCHES WILL TURN FROM RED TO GREEN. FREE EXIT AT ALL TIMES.

**Set: 33.0**

Single Misc, 915 x 2135 x 45, None x None,

10	Master Key	Master Keys		SA
2	Control Key	Extra Keys per Lock		SA
1	Master Key	Visual Keying (Cylinder and Keys)		SA
100	Key Blank	Key Blanks		SA
1	KIL Cylinder	Medeco 2080161 (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Mortise Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Rim Cylinder	Medeco (P4) x Mkeyed x Babbs Lock & Safe	Std	MC
1	Power Supply x Battery Back Up 5AMP	Millennium PS1-100213-005	Std	OT
1	Site Controller Unit (SCU)	Millennium 149-101117	Std	OT
1	Prox Card	Millennium 065-101066	Std	OT
1	Site Intrenet Interface (SEI)	Millennium 051-507972	Std	OT
1	Key Cabinet	BH-551-140-3		LU

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 71 00 – Door Hardware

Page 41 of 41

Door Index
------------

Opening Numbers	Heading Numbers	Opening Numbers	Heading Numbers	Opening Numbers	Heading Numbers
1001	11.0	2016	21.0	3025	21.0
1003C	10.0	2017A	1.0	3026	27.0
2V02	23.0	2017B	1.0	3027	27.0
2V03	24.0	2018	15.0	3C01	22.0
2006B	1.0	2018B	9.0	3014	14.0
2007D	1.0	2019	8.0	3015	25.0
2009	2.0	2020	8.0	3015A	13.0
2009A	26.0	2021	18.0	3015B	12.0
2009B	26.0	2025	25.0	3016	25.0
2009C	3.0	2026	31.0	3017	25.0
2009G	28.0	X2V02	5.0	3018	32.0
2010	16.0	X2016	4.0	3019	32.0
2011	29.0	3020D	27.0	3020	30.0
2012	20.0	3021	27.0	3020A	6.0
2012A	17.0	3022	27.0	3020B	19.0
2013	20.0	3023	27.0	X3020	7.0
2014	20.0	3024	27.0	Misc	33.0

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 1 of 7

---

**PART 1      GENERAL**

**1.1      RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 45 00 - Quality Control.
- .3      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4      Section 01 78 00 - Closeout Submittals.
- .5      Section 07 82 00 – Joint Sealants.
- .6      Section 08 11 14 – Metal Doors & Frames.
- .7      Section 08 11 16 – Aluminum Doors and Frames.
- .8      Section 08 14 16 – Flush Wood Doors.
- .9      Section 08 44 13 – Glazed Aluminum Curtain Walls.
- .10     Section 08 71 00 – Door Hardware

**1.2      REFERENCES**

- .1      American National Standards Institute (ANSI).
  - .1      ANSI/ASTM E330, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2      American Society for Testing and Materials (ASTM)
  - .1      ASTM C542, Specification for Lock-Strip Gaskets.
  - .2      ASTM D2240, Test Method for Rubber Property – Durometer Hardness.
  - .3      ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
  - .4      ASTM C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
  - .5
- .3      Canadian General Standards Board (CGSB).
  - .1      CAN/CGSB-12.1, Tempered or Laminated Safety Glass.
  - .2      CAN/CGSB-12.3, Clear Float Glass
  - .3      CAN/CGSB-12.5, Mirrors, Silvered.
  - .4      CAN/CGSB-12.8, Insulating Glass Units.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 2 of 7

- .5 CAN/CGSB-12.11, Wired Safety Glass.
- .4 Canadian Standards Association (CSA).
  - .1 CSA A440.2, Energy Performance Evaluation of Windows and Sliding Glass Doors.
  - .2 CSA Certification Program for Windows and Doors.
- .5 Glass Association of North American (GANA)
  - .1 GANA Glazing Manual.
  - .2 GANA Laminated Glazing Reference Manual.

**1.3 SYSTEM DESCRIPTION**

- .1 Performance Requirements:
  - .1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials.
  - .2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330 and NBC latest edition.
  - .3 Limit glass deflection to 1/200 with full recovery of glazing materials.

**1.4 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications, and data sheet.
- .2 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.
- .3 Closeout Submittals:
  - .1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

**1.5 QUALITY ASSURANCE**

- .1 Perform work in accordance with GANA Glazing Manual and Laminated Glazing Reference Manual for glazing installation methods. Provide shop inspection and testing for glass.
- .3 Provide certificate of quality compliance from manufacturer.

**1.6 MOCK-UPS**

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
  - .1 Construct mock-up to including glass glazing, and perimeter air barrier and vapour retarder seal.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 3 of 7

- .2 Mock-ups will be used to judge workmanship, substrate preparation, operation of equipment and material application.
- .3 Construct mock-ups where directed.
- .4 When accepted, mock-ups will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
- .5 Allow 24 hours for inspection of mock-ups by Owner's Representative before proceeding with work.

**1.7 WARRANTY**

- .1 Provide 10-year warranty for glazing units from the date of Substantial Completion, except as noted below.

**1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Install glazing when ambient temperature is 10° C minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

**PART 2 PRODUCTS****2.1 MATERIALS: FLAT GLASS**

- .1 Float glass: to CAN/CGSB-12.3, Glazing quality.
  - .1 6 mm minimum thickness.
- .2 Single-glazed spandrel panels:
  - .1 To CAN/CGSB-12.1, Type -2 Tempered, 6 mm thick.
  - .2 Clear with colour ceramic frit on the #2 surface. Colour to be selected from manufacturer's line of colours.
- .3 Laminated safety glass for typical interior doors, screens, sidelights, vestibule glazing and millwork: to CAN/CGSB-12.1.
  - .1 Clear.
  - .2 Type 1 - laminated.
  - .3 Class B – float to CAN/CGSB-12.3.
  - .4 Annealed.
  - .5 2 x 3 mm with 0.015 thick interlayer for 6 mm minimum total thickness.
- .4 Fire rated glazing for doors:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 4 of 7

- .1 Fire-protection rated and impact safety rated glazing material made from clear, transparent glass-ceramic with a surface-applied safety film (no wires).
  - .1 Impact safety rating as per ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
  - .2 Fire rating: 45 minutes.
  - .3 Thickness 5 mm.
- .2 Glazing to display permanent UL / ULC label indicating rating.
- .3 Standard of acceptance:
  - .1 Pyran Platinum F.
  - .2 TGP FireLite NT.

## 2.2 MATERIALS: SEALED INSULATING GLASS

- .1 Insulating glazing units for exterior windows/curtain wall: to CAN/CGSB-12.8, double unit, 25 mm nominal overall thickness.
  - .1 Outer lite: Clear tempered to CAN/CGSB-12.1, type-2 with Low-E coating on #2 surface.
    - .1 Standard of acceptance:
      - .1 Vitro Solarban 70XL.
  - .2 Inner lite: Clear tempered to CAN/CGSB-12.1, type-2, 6 mm thick.
  - .3 Cavity dimension: 13 mm.
  - .4 Gas Fill: 90% argon, 10% air.
  - .5 Performance criteria (centre of glass thermal and optical properties):
    - .1 Performance specification based on PPG Industries.
    - .2 Transmittance:
      - .1 Visible: 64%
      - .2 UV / Krochman Damage Weighted: 6 / 22%
      - .3 Total Solar Energy: 24%
    - .3 Reflectance:
      - .1 Visible Out: 12%
      - .2 Visible In: 12%
      - .3 Total Solar Energy (Out): 52%
    - .4 U-value summer: 1.18 W/m<sup>2</sup>/C
    - .5 U-value winter: 1.35 W/m<sup>2</sup>/C
    - .6 Solar Heat Gain Coefficient: 0.27
    - .7 Shading Coefficient: 0.31
    - .8 Relative Heat Gain: 204 W/m<sup>2</sup>
    - .9 Colour Properties:
      - .1 Transmittance: L\* 83.88, a\* -4.93, b\* 4.01
      - .2 Reflectance: L\* 41.28, a\* -3.26, b\* -3.88
- .2 Insulating glazing units for installation in all exterior doors:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 5 of 7

- .1 Outer lite: safety glass to CAN/CGSB-12.1, Type 2 Tempered 6 mm thick with Low-E coating on #2 surface. Performance requirements as above.
  - .2 Inner lite: safety glass to CAN/CGSB-12.1, clear, Type 2 Tempered 6 mm thick.
  - .3 Gas Fill: 90% argon, 10% air
  - .4 Spacer dimension as required to suit door thickness.
- .3 Insulating glazing units for interior doors and frames: to CAN/CGSB-12.8, double unit, 19.5 mm nominal overall thickness.
- .1 Outer lite: Clear laminated CAN/CGSB-12.1, type-1, 2 x 3 mm thick with 0.015 thick interlayer for 6 mm minimum total thickness.
  - .2 Inner lite: Clear tempered to CAN/CGSB-12.1, type-2, 4 mm thick.
  - .3 Cavity dimension: 9.5 mm.
  - .4 Gas Fill: 100% air.
  - .5 Locations:
    - .1 Screen types S-1 and S-2
    - .2 Where “SU” is noted in door schedule.
    - .3 All doors and sidelights between the pool area and adjacent interior spaces.

**2.3 MATERIALS: SEALANT**

- .1 Refer to section 07 92 00 – Joint Sealants.

**2.4 ACCESSORIES**

- .1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, minimum 100 mm x 6 mm thick x width of glazing rabbet space minus 1.5 mm x height.
- .2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face. Do not use metal, plastic or wood shims.
- .3 Glazing tape:
  - .1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.
- .4 Glazing splines and gaskets:
  - .1 Manufacturer’s standard dry neoprene glazing splines and gaskets.
  - .2 Provide keyed type for fixed glazing stops and keyed or roll-in type for removable glazing retaining devices.
  - .3 Except where otherwise specified, colour shall match frame colour.
- .5 Glazing clips: manufacturer's standard type.
- .6 Lock-strip gaskets: to ASTM C542.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 6 of 7

**PART 3      EXECUTION**

**3.1      MANUFACTURER'S INSTRUCTIONS**

- .1      Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2      Install switchable privacy glazing in strict accordance with the manufacturer's installation instructions.

**3.2      EXAMINATION**

- .1      Verify that openings for glazing are correctly sized and within tolerance.
- .2      Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

**3.3      PREPARATION**

- .1      Clean contact surfaces with solvent and wipe dry.
- .2      Seal porous glazing channels or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.

**3.4      INSTALLATION: EXTERIOR – WET/DRY METHOD (PREFORMED TAPE AND SEALANT)**

- .1      Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2      Cut glazing tape to length and set against permanent stops, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.
- .3      Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- .4      Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .5      Rest glazing on setting blocks and push against tape and heel of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.
- .6      Install removable stops with spacer strips inserted between glazing and applied stops 6 mm below sight line.
- .7      Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.
- .8      Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 08 80 50 – Glazing

Page 7 of 7

---

**3.5           INSTALLATION: INTERIOR DRY METHOD (TAPE AND TAPE)**

- .1     Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2     Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .3     Place setting blocks at 1/4 with edge block maximum 150 mm from corners.
- .4     Rest glazing on setting blocks and push against tape with sufficient pressure to attain full contact at perimeter of light or glass unit.
- .5     Place glazing tape on free perimeter of glazing in same manner described in 3.4.3. Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- .6     Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact. Knife trim protruding tape.

**3.6           CLEANING**

- .1     Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2     Remove traces of primer, caulking.
- .3     Remove glazing materials from finish surfaces.
- .4     Remove labels after work is complete.
- .5     Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacture's instructions.
- .6     Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**3.7           PROTECTION OF FINISHED WORK**

- .1     After installation, mark light with an "X" by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.
- .2     Repair damage to adjacent materials caused by glazing installation.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 1 of 8

**PART 1      GENERAL**

**1.1            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures
- .2      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .3      Section 05 41 00 – Structural Metal Stud Framing
- .4      Section 06 10 00 - Rough Carpentry
- .5      Section 07 21 16 – Blanket Insulation
- .6      Section 07 26 00 –Vapour Retarders.
- .7      Section 07 27 00 – Air Barriers
- .8      Section 07 84 00 – Firestopping.
- .9      Section 07 92 00 – Joint Sealants.
- .10     Section 09 22 16 – Non-Structural Metal Framing

**1.2            REFERENCES**

- .1      Codes and standards referenced in this section refer to the latest edition thereof.
- .2      American Society for Testing and Materials, (ASTM)
  - .1      ASTM C475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - .2      ASTM C514, Specification for Nails for the Application of Gypsum Board.
  - .3      ASTM C840, Specification for Application and Finishing of Gypsum Board.
  - .4      ASTM C931/C931M, Specification for Exterior Gypsum Soffit Board.
  - .5      ASTM C954, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
  - .6      ASTM C1002, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .7      ASTM C1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  - .8      ASTM C1278/C1278M-07A (2011) Standard Specification for Fiber-Reinforced Gypsum Panels.
  - .9      ASTM C1396/C1396M – 14a Standard Specification for Gypsum Board.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 2 of 8

- .10 ASTM C1629 / C1629M - 06(2011) Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
- .11 ASTM C1177/C1177M-01, Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .3 Association of the Wall and Ceilings Industries International (AWCI): Recommended Specification on Levels of Gypsum Board Finish.
- .4 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.

**1.3 SUBMITTALS**

- .1 Submit manufacturer's printed product literature, specifications and data sheet.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry and protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

**1.5 SITE ENVIRONMENTAL REQUIREMENTS**

- .1 Maintain temperature minimum 10° C, maximum 21° C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

**1.6 QUALIFICATIONS**

- .1 Dry wall installers: minimum 5 years proven experience.

**PART 2 PRODUCTS****2.1 MATERIALS**

- .1 Glass mat reinforced gypsum substrate sheathing (exterior grade gypsum board): to ASTM C1177, 15.9 mm thick, 1200 mm wide x maximum practical length.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 3 of 8

- .2 Standard board: regular and Type X, to ASTM C36/C36M. Thicknesses as indicated on schedules and drawings, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.
  - .1 All interior walls, ceilings and bulkheads except as noted below for paperless board or tile backerboard.
- .3 Paperless interior-grade fiber reinforced gypsum board: to ASTM C1278/C1278M-07A (2011):
  - .1 Locations:
    - .1 The side of all walls, ceilings and ceiling area bulkheads that are exposed to the aquatics/pool area room (AQ-20095 and AQ-2009A), including the mezzanine wall and the high wall near grid line 3.2 separating the pool area from the fitness mezzanine.
    - .2 All shower and change cubicle areas in the Family Change Room AQ-2012.
  - .2 Regular and Type X as required, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.
  - .3 Thickness: as indicated on schedules and drawings.
  - .4 Surfacing: coated fibreglass mat on face, back and long edges.
  - .5 Mould resistance rating of 10 as per ASTM D3273.
  - .6 Microbial resistance as per ASTM D6329: will not support microbial growth.
  - .7 Flexural strength as per ASTM C473:
    - .1 parallel:  $\geq 110$  lbf;
    - .2 perpendicular:  $\geq 140$  lbf.
  - .8 Nail pull at 16 mm thick panel:  $\geq 80$  lbf.
  - .9 Water absorption as per ASTM C630, C1396, C1658:  $\leq 5\%$  of weight.
  - .10 Standard of acceptance:
    - .1 Densarmor Plus Interior Panel by Georgia-Pacific.
  - .11 Joint finishing:
    - .1 fibreglass joint tape and setting-type compound for all joints in paperless gypsum board.
    - .2 Skim coat entire surface with ready-mix compound where there is no fibreglass reinforced panel (FRP) finish.
- .4 Tile backer board: moisture and mould resistant gypsum panel with a fibreglass mat facer and back as per ASTM C1178.
  - .1 Install in the following areas:
    - .1 All gypsum board walls listed as having a ceramic tile finish in the room finish schedule, regardless of partition type.
    - .2 Refer to Room Finish Schedule and Finish Plans for further information.
  - .2 Regular and Type X as required by wall type fire rating.
    - .1 Thickness: 16 mm.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 4 of 8

- .2 Surfacing: fiberglass mat on face, back and long edges.
- .3 Mould resistance rating of 10 as per ASTM D3273.
- .4 Permeability as per ASTM E96 Procedure A:  $\leq 1$  Perm.
- .5 Standard of acceptance:
  - .1 GCG Durock Glass-Mat Tile Backerboard.
  - .2 Georgia-Pacific DensShield Tile Backer.
- .6 Joint finishing:
  - .1 Refer to Section 09 30 00 – Ceramic and Porcelain Tiling for mortar and waterproofing layer under tile finish.
  - .2 Joint finish not required at ceilings with FRP panel finish.
- .5 Joint Treatment (Tape):
  - .1 Cross-fibered paper joint tape, 52 mm wide.
  - .2 Self-adhesive fiberglass tape, 50 mm wide:
    - .1 Mould resistance rating of 10 as per ASTM D3273.
    - .2 Standard of acceptance: CGC Mould Resistant Fibreglass Drywall Tape.
- .6 Joint compound: to ASTM C475, asbestos-free.
  - .1 Ready-mixed:
    - .1 Vinyl-type formulation suitable for hand or mechanical application. Approximately 61 to 73 kg/100 m<sup>2</sup> of gypsum board panels.
    - .2 Standard of acceptance: CGC All Purpose Drywall Compound.
  - .2 Setting-type:
    - .1 Chemically setting power compounds for paperless gypsum board panels, specially formulated for high-humidity environments.
    - .2 Vinyl binder, calcium sulphate filler.
    - .3 Dilution with water, approximately 6.5 to 7.5 L/11 kgs. or 3 parts powder to 1 part water. (Refer to manufacturer's instructions for specific water dilution directions).
    - .4 Dry bulk density: Approximately 515 kg/m<sup>3</sup>.
    - .5 Standard of acceptance: CGC Sheetrock 20, 45 or 90.
- .7 Special trim pieces, dimensions as noted on drawings or as required for application:
  - .1 J-bead: PVC J bead with 9.5 mm return section (behind panel) and 28.5 mm perforated leg for embedment in drywall compound. Designed for butting drywall to other substrates such as masonry, glazing, door or window frames, etc. Standard of acceptance: Trim-Tex Mud-on J Bead.
  - .2 Wall-mounted deflection bead: PVC trim designed to prevent cracking when installed against a ceiling or concrete deck that is subject to movement. Includes break-away paint shield. Standard of acceptance: Trim-Tex Drywall Products, wall-mounted deflection bead.
  - .3 Expansion/control joint bead: closed PVC V-shaped expansion bead with perforated anchoring legs each side. Designed to allow up to 9.5 mm of

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 5 of 8

- movement without cracking. Include purpose-made intersection pieces. Standard of acceptance: Trim-Tex Drywall Products 093V Expansion.
- .4 Z-reveal trim: non-vented, Z-shaped extruded 6063 T5 aluminum alloy with a 22 mm leg for embedment in drywall compound and an exposed reveal section in clear anodized finish. Standard of acceptance: DRMZ by Fry Reglet.
- .8 Miscellaneous casing beads, corner beads, control joints and edge trim, not otherwise specified: to ASTM C1047, metal, zinc-coated by hot-dip process 0.5 mm base thickness, perforated flanges, one piece length per location.
- .9 Metal furring runners, hangers, tie wires, inserts and anchors: to CSA A82.30 galvanized.
- .10 Resilient drywall furring and miscellaneous drywall furring channels: 0.5 mm base thickness galvanized steel channels for resilient or screw attachment of gypsum board.
- .11 Steel drill screws: to ASTM C1002.
- .12 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

**PART 3**      **EXECUTION**

**3.1**            **APPLICATION**

- .1 Install and finish gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Construct fire rated assemblies where indicated, seal penetrations as per Section 07 84 00 – Firestopping.
- .3 Install work level and plumb to tolerance of 1:1200
- .4 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work is approved.
- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .7 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- .8 Install gypsum board with face side out.
- .9 Do not install damaged or damp boards.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 6 of 8

- .10 Apply single and double layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm oc.
  - .1 Single-Layer Application:
    - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
    - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
  - .2 Double-Layer Application:
    - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
    - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
    - .3 Apply base layers at right angles to supports unless otherwise indicated.
    - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .11 Apply single layer gypsum board to concrete or concrete block surfaces, where indicated, using laminating adhesive.
  - .1 Comply with gypsum board manufacturer's recommendations.
  - .2 Brace or fasten gypsum board until fastening adhesive has set.
  - .3 Mechanically fasten gypsum board at top and bottom of each sheet.
- .12 When sealant (either fire rated or acoustic) is required between the floor and the gypsum board, leave a 9.5 mm gap between the gypsum board and the floor to allow room for sealant placement.
- .13 For STC rated rooms:
  - .1 Seal all penetrations or junctions/intersections with all penetrations, structure or adjacent gypsum board walls with a continuous 12 mm diameter bead of acoustic sealant.
  - .2 Seal perimeter of gypsum board wall and ceiling panels to adjacent surfaces in the same manner as described above.

### 3.2 INSTALLATION

- .1 Install casing beads, corner beads, control joints, edge trim and all other accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where such lengths are available from the product manufacturer. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately without exposed rough edges. Secure at 150 mm OC.
- .2 Casing beads:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 21 16 – Gypsum Board Assemblies

Page 7 of 8

- .1 Install casing beads or J-trim around perimeter of suspended ceilings and where gypsum board butts against surfaces having no trim concealing junction and where indicated to install on drawings.
- .2 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .3 Seal joints with sealant.
- .3 Control joints:
  - .1 Consult with Owner's Representative regarding the location of control joints.
    - .1 Minimum requirements: locate control joints at changes in substrate construction, at building expansion and construction joints, where continuous surfaces exceed nine meters in any direction or as detailed on drawings.
    - .2 Construct control joints of purpose-made trim pieces installed as per the manufacturer's instructions. Trim piece to have each side leg supported independently on either side of the joint.
    - .3 Provide continuous dust barrier behind and across control joints.
    - .4 Install control joints straight and true.
- .4 Install access doors to electrical and mechanical fixtures as specified in respective sections.
  - .1 Rigidly secure frames to furring or framing systems.
- .5 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
  - .1 For wall and ceiling areas above the finished ceiling that are not exposed to general view, and for walls to be covered with a fiberglass reinforced panel (FRP) finish:
    - .1 Level 2: All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
  - .2 For all interior paperless gypsum board panels without FRP finish:
    - .1 Level 5: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, shall

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 09 21 16 – Gypsum Board Assemblies**

**Page 8 of 8**

---

be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges.

- .3 For all interior walls, ceilings and ceiling bulkheads except those which are permitted to have a level 2 finish or required to have a level 5 finish as noted above:
  - .1 Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats (in addition to the embedment coat) of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges.
- .6 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish, where surface finish is required.
- .7 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 22 16 – Non-Structural Metal Framing

Page 1 of 3

**PART 1      GENERAL****1.1      RELATED SECTIONS**

- .1      Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2      Section 06 10 00 - Rough Carpentry
- .3      Section 07 92 00 – Joint Sealants.
- .4      Section 07 21 16 – Blanket Insulation.
- .5      Section 09 21 16 - Gypsum Board Assemblies.

**1.2      REFERENCES**

- .1      American Society for Testing and Materials International, (ASTM).
  - .1      ASTM C645, Specification for Nonstructural Steel Framing Members.
  - .2      ASTM C754, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

**1.3      SUBMITTALS**

- .1      Submit manufacturer's printed product literature, specifications and data sheet.
  - .1      Indicate base metal thickness of each product supplied.

**PART 2      PRODUCTS****2.1      MATERIALS**

- .1      Non-load bearing channel stud framing: to ASTM C645, roll formed from hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
  - .1      Base metal thickness:
    - .1      Typical: 0.912 mm (20 ga.)
    - .2      Special cases as indicated on drawings or schedules: 1.519 mm (16 ga.) or 1.214 mm (18 ga.).
  - .2      Stud sizes as indicated on the drawings or schedules.
  - .3      Bottom track: single piece.
  - .4      Top track: single piece track **or** double track **or** slotted single top track. (double track or slotted single top track to accommodate deflection).
- .2      Furring Channels:
  - .1      Hat or modified hat sections for ceiling or wall assemblies:

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 22 16 – Non-Structural Metal Framing

Page 2 of 3

- .1 22 mm deep profile, minimum 0.91 mm (20 ga.) base thickness steel, commercial grade to ASTM A653 galvanized.
- .2 Metal furring runners, hangers, tie wires, inserts and anchors: to CSA A82.30 galvanized.
  - .1 41 mm metal stud profile, minimum 0.91 mm (20 ga.) base thickness steel, commercial grade to ASTM A653 galvanized.
- .3 Resilient drywall furring and miscellaneous drywall furring channels:
  - .1 0.48 mm (25 ga.) base thickness galvanized steel channels for resilient or screw attachment of gypsum board.
- .3 Steel drill screws: to ASTM C1002.
- .4 Acoustical sealant: to Section 07 92 00 – Joint Sealants.
- .5 Insulating strip: rubberized, moisture resistant 3 mm thick cork foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.
- .6 Dampproof course: closed cell, polyethylene foam, 6.3 mm thick, 89 mm wide.

**PART 3      EXECUTION**

**3.1      ERECTION**

- .1 Align partition tracks at floor and ceiling and secure at 600 mm o.c maximum.
- .2 Allow minimum deflection gap of 16.5 mm for double track or slotted single top track.
- .3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .4 Install continuous insulating strips to isolate studs from uninsulated surfaces, where applicable.
- .5 Place studs vertically at 400 mm o.c and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Attach studs to bottom and ceiling track using screws. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .6 Erect metal studding to tolerance of 1:1000.
- .7 Coordinate erection of studs with installation of service lines. When erecting studs ensure web openings are aligned. Install steel studs or furring channel between studs for attaching electrical and other device boxes.
- .8 Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .9 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 22 16 – Non-Structural Metal Framing

Page 3 of 3

- .10 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .11 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .12 For tall metal stud walls, brace studs back to building structure or metal deck above the ceiling level, where not exposed to view.
- .13 Brace corners of walls that extend above the ceiling but not to the structure with horizontally laid studs or metal furring channels diagonally across walls meeting at 90 degrees.
- .14 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .15 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .16 Frame perimeter of openings at cabinets, access panels, light fixtures, diffusers, grilles and other protrusions or built-in equipment in walls, ceilings or bulkheads. Extend framing into reveals. Check clearances with equipment suppliers.
- .17 Provide plywood blocking in accordance with Section 06 10 00 – Rough Carpentry as required to space-out and support casework; cabinets; wall and ceiling finishes; facings, fascia, soffits or other cladding components; signage; electrical equipment mounting boards; door stops and other door hardware; washroom accessories; televisions and message boards; and all other items of work required to be attached to steel stud framing, drywall or other areas as required.
  - .1 Minimum blocking composition to be 2 layers of 16 mm plywood.
  - .2 Blocking to span a minimum of two stud spaces, attached to three studs.
- .18 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
- .19 Install two continuous beads of acoustical sealant under stud tracks around perimeter of sound control partitions.

### **3.2 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 1 of 10

**PART 1      GENERAL****1.1 RELATED SECTIONS**

- .1 Section 01 00 00 – General Requirements.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 78 00 – Closeout Submittals.
- .4 Section 07 92 00 - Joint Sealants.
- .5 Section 10 28 10 – Washroom Accessories.

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108.1, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
  - .2 ANSI A118.3: Water Cleanable Tile Setting and Grouting Epoxy.
  - .3 ANSI A118.4: Latex-Portland Cement Mortar
- .2 American Society for Testing and Materials (ASTM)
  - .1 ASTM C144, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C207, Specification for Hydrated Lime for Masonry Purposes.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-75.1-M88.
- .4 Canadian Standards Association (CSA)
  - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A5, A8, A23.5, A362, A363, A456.1, A456.2, A456.3).
- .5 International Organization for Standardization (ISO)
  - .1 ISO/TC 189 – Ceramic Tile
  - .2 ISO 13006:2012 – Ceramic Tiles – Definitions, Classifications, Characteristics and Marking.
  - .3 ISO 13007 – Grouts and Adhesives, parts 1 through 4.
  - .4 ISO 10545-Ceramic Tiles, parts 1 through 16.
- .6 Terrazzo Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09300.
  - .2 Tile Installation Manual.
  - .3 Tile Maintenance Guide.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 2 of 10

---

- .7 Other testing or standards organizations as noted under individual materials in Part 2 Products.

### **1.3 SUBMITTALS**

- .1 Submit manufacturer's product data for all materials specified in this section.
- .2 Submit a list of all regular and special shapes/trim tiles included in the project.
- .3 If requested by Owner's representative, submit full-size sample tiles of each colour, texture, size, and pattern of tile.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store, handle and protect materials in accordance with Section 01 10 00 – General Requirements.
- .2 Deliver, store and handle products in a manner to avoid damage or contamination.
- .3 Have materials delivered to job site prior to installation.
- .4 Deliver all products to job site in manufacturer's unopened cartons with all labels intact and legible.
- .5 Keep cartons dry and protect from vandalism and away from heavy traffic area.
- .6 Store cartons in upright position.

### **1.5 ENVIRONMENTAL CONDITIONS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
- .2 Provided continuous ventilation during and after installation.
- .3 Maintain air temperature and structural base temperature at ceramic tile installation area above 12°C for 48 h before, during, and 48 h after, installation.
- .4 Do not install any products specified in the section at temperatures below 12°C or above 30°C.

### **1.6 EXTRA MATERIAL**

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type, shape and colour of tile required for project for maintenance use. Store where directed by Owner's representative.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 3 of 10

- .3 Maintenance material to be of same production run as installed material.

## **1.7 QUALIFICATIONS**

- .1 Tile setters: Minimum 5 years proven experience.

## **1.8 MOCK-UP**

- .1 Construct mock-ups as follows:
  - .1 Complete one individual washroom including floor, cove base, wall tile and any required trims for review before proceeding with remainder of installation.
  - .2 Install preformed base, curb, drain and waterproofing membrane in one shower stall for review before proceeding with remainder of installation.
- .2 Mock-ups will be reviewed by Owner's Representative during the next scheduled site visit. Mock-up must be reviewed and approved before proceeding with remainder of work.
- .3 When accepted, mock-ups will demonstrate minimum standard for this work. Mock-ups may remain as part of finished work.

## **1.9 QUALITY ASSURANCE**

- .1 Provide certificate of quality compliance from tile manufacturer.
- .2 Provide certificate of quality compliance from tile installer upon satisfactory completion of installation.

## **PART 2      PRODUCTS**

### **2.1 GENERAL NOTES**

- .1 Locations for tile types are scheduled below. Also refer to Room Finish Schedule, enlarged plans and detail drawings for tile types, colours and locations (colours to be determined after contract award).
- .2 The products listed in this specification are available from Elegant Flooring, 226 Bedford Highway, Halifax, NS. (902) 443-3700 or (800) 265-3368.
  - .1 Products from other manufacturers will be considered provided they meet the performance and aesthetic requirements stipulated herein.

### **2.2 FLOOR TILE**

- .1 For change room and washroom floors: unglazed porcelain tile to CAN/CGSB-75.1-M88, Type 4, MR 1.
  - .1 Slip resistance: R11.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 4 of 10

- .2 Material properties:
    - .1 Resistance to abrasion:  $\geq 100$  per ASTM C-501.
    - .2 Water absorption:  $\leq 0.5\%$  per ASTM C-373.
    - .3 Breaking strength: 1890 N per ASTM C-648.
  - .3 Format: 200 mm x 200 mm x 8.5 mm thick.
  - .4 Texture: Rough, unglazed.
  - .5 Colour: Speckled, mainly off-white or grey.
  - .6 Base: 100 mm high x 200 mm long cove base.
    - .1 Base to be regular, unglazed texture.
    - .2 Flat top, install PVC edge protection at top of tile where there is no wall tile finish.
    - .3 Include purpose made inside and outside corners as required for a complete base installation.
    - .4 At locker bases, use floor tile to continue tile finish above cove base to the underside of the locker which is situated on a 200 mm high concrete block.
  - .7 Standard of acceptance: Granitogres Technic by Casalgrande Padana.
    - .1 Secura (surface), colour to be selected from manufacturer's standard range.
- .2 For shower floors:
- .1 Material properties:
    - .1 Water absorption:  $\leq 0.5\%$  per ISO 10545-3.
    - .2 Breaking strength:  $>1300$  N per ISO 10545-4.
    - .3 Slip resistance:  $>R9$ .
  - .2 Format: 50 mm x 50 mm x 6 mm thick, dot-mounted in 300 mm squares.
  - .3 Texture: unglazed.
  - .4 Standard of acceptance: Unglazed Dot-Mount Mosaics by Baz Mosaics
    - .1 Colour: to be selected from manufacturer's standard range.
- .3 For diving mezzanine floor: anti-slip, extruded porcelain tile, purpose-made for swimming pool applications.
- .1 Slip resistance (bare-foot), DIN 51097: C rating.
  - .2 Material properties:
    - .1 Dimension tolerance per ISO 10545-2:  $< 1\%$ .
    - .2 Water absorption per ISO 10545-3:  $< 0.5\%$ .
    - .3 Breaking strength per ISO 10545-4:  $36 \text{ N/mm}^2$ .
    - .4 Resistance to deep abrasion per ISO 10545-6:  $< 175 \text{ mm}^3$
    - .5 Linear thermal expansion coefficient per ISO 10545-8:  $5.8 \times 10^{-6} \times \text{K}^{-1}$ .
    - .6 Scratch hardness of surface per UNE 67101:85: 8
    - .7 Resistance to stains per ISO 10545-14: Class 5.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 5 of 10

- .3 Format: 119 mm x 244 mm x 9 mm thick.
- .4 Texture:
  - .1 Natural, unglazed (typical application).
- .5 Standard of acceptance: Technical Range (Piscinas) by Gres de Aragón.
  - .1 Colours: to be selected from manufacturer's standard range.

**2.3 WALL TILE**

- .1 Glazed ceramic tile to CAN/CGSB-75.1-M88, Type 5, MR 4.
  - .1 Material properties per UNE EN ISO 10545:
    - .1 Water absorption:  $\geq 10\%$
    - .2 Breaking strength: Min. 600 N
    - .3 Flexural strength:  $\geq N/mm^2$
    - .4 Stain resistance: Min. class 3
    - .5 Chemical resistance, cleaning products: Min. class B.
  - .2 Format: 200 mm x 500 mm x 8 mm thick.
  - .3 Standard of acceptance: Happy Series by Azuliber
    - .1 Colour: To be selected from manufacturer's standard range. Must include a range of different colours.

**2.4 MORTAR**

- .1 All primers, mortar and grout must be compatible, preferably from the same manufacturer.
- .2 Thick Set Mortar (Levelling Compound for Showers):
  - .1 One-part, cement-based, highly sag-resistant, polymer-fortified modelling compound suitable for single-application thicknesses up to 50 mm.
    - .1 Primers: as recommended by manufacturer or as indicated below.
  - .2 Standard of acceptance: Servocrete RS by Kiesel.
- .3 Thin Set Mortar for walls only:
  - .1 One-part, cement-based, sag-resistant, polymer-fortified flexible thin set mortar with extended coverage, excellent bonding strength and easy handling as per EN 12 004 C3 TE-S1.
  - .2 Standard of acceptance: Servolight by Kiesel.
- .4 Full Transfer Thin Set Mortar for all floors:
  - .1 Flexible, cement-based thin set and medium bed mortar with polymer additive for interior and exterior applications as per EN 12 004 C2 FE-S1.
    - .1 Specially formulated to provide full mortar transfer to avoid air entrapment between mortar and tile.
  - .2 Standard of acceptance: Servoflex-Trio Super Tec by Kiesel.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 6 of 10

**2.5 GROUT**

- .1 Typical: High-strength alumina cement-based grout suitable for general interior applications and providing superior resistance against microorganisms and mould.
  - .1 Efflorescence free.
  - .2 Abrasion resistance to CG 2 WA nach, DIN EN 13888.
  - .3 Chemical resistance:
    - .1 Formic acid  $\leq 3\%$ : conditionally resistant.
    - .2 Acetic acid  $\leq 2\%$ : resistant,  $\leq 5\%$  conditionally resistant.
    - .3 Lactic acid  $\leq 5\%$ : conditionally resistant.
    - .4 Hydrochloric acid  $\leq 2\%$ : conditionally resistant.
    - .5 Tartaric acid  $\leq 5\%$ : conditionally resistant.
    - .6 Citric acid  $\leq 2\%$ : resistant,  $\leq 5\%$  conditionally resistant.
    - .7 Phosphoric acid  $\leq 2\%$ : resistant,  $\leq 5\%$ : conditionally resistant, alkaline solution  $\leq 10\%$ : resistant.
    - .8 Ammonia  $\leq 25\%$ : resistant.
    - .9 Calcium hydroxide  $\leq 10\%$ : resistant.
    - .10 Solvents: acetone, ethanol, isopropanol-xylol: resistant.
  - .4 Joint width:
    - .1 Floor tile: 6 mm.
    - .2 Ceramic wall tile: 3 mm.
  - .5 Standard of acceptance: Servoperl Royal by Kiesel.
    - .1 Colours: to be selected from manufacturer's standard range.

**2.6 WATERPROOFING MEMBRANE**

- .1 Sheet-Applied Bonded Waterproofing Membrane: for shower floors and walls.
  - .1 To: ANSI A118.1 specifications for load bearing bonded waterproof membrane for thin-set ceramic tile. Product must be cUPC listed and evaluated by ICC-ES (see report No. ESR-2467).
  - .2 0.2mm (0.008") thick polyethylene membrane with polypropylene fleece laminated to both sides.
  - .3 Include seam and pre-formed inside and outside corner reinforcing and any special shapes as recommended by manufacturer and as required to complete the waterproofing system in every shower area including over the curb and transitions to the washroom flooring. Include purpose-made seals for penetrations.
  - .4 Standard of acceptance: Kerdi system by Schluter.
- .2 Cementitious Waterproofing Membrane: for diving mezzanine floor.
  - .1 Fibreless, one-component, self-drying, cement-based, flexible waterproofing membrane to provide a flexible seal on substrate construction against accumulating surface and pressure water  $\leq 300$  kPa (3.0 Bar).

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 7 of 10

- .1 Suitable for continuously submerged conditions.
- .2 Density: 1.2 kg/L (mixed material).
- .2 Suitable for use over thick set mortar specified above.
- .3 Prime substrate as recommended by manufacturer.
- .4 Include seam and corner reinforcing as recommended by manufacturer at control joints, junctions between adjacent surfaces (inside/outside corners) or any and all gaps or voids that the membrane cannot adequately span.
- .5 Membrane application and thickness:
  - .1 Minimum 2 layers for a total combined dry membrane thickness of 3 mm.
- .6 Standard of acceptance: Servoflex DMS 1K Super Tec by Kiesel.

**2.7 PRIMERS:**

- .1 Prime substrates as recommend by manufacturer.
- .2 Solvent-free, dispersion primer designed to bond and adhere to absorbent or non-absorbent substrates before levelling work or tiling.
  - .1 Density: 1.06 g/cm<sup>3</sup>
- .3 Standard of acceptance: Okatmos UG30 by Kiesel.

**2.8 ACCESSORIES**

- .1 Cove base profile:
  - .1 Rigid PVC cove-shaped profile for floor/wall intersections with anchoring legs installed under tile layer. Can accommodate different thickness wall and floor tiles.
  - .2 Radius: 18 mm.
  - .3 Include purpose-made inside and outside corner pieces.
  - .4 Colour: light (classic) grey.
  - .5 Standard of acceptance: Schluter Dilex-HKW.
- .2 Movement joint:
  - .1 Surface joint with rigid PVC anchoring legs to protect tile edges and a 5 mm wide soft CPE movement zone that separates individual fields in the tile and forms the visible surface.
  - .2 Colour: light (classic) grey.
  - .3 Standard of acceptance: Schluter Dilex-BWS.
- .3 Edge protection for tiles:
  - .1 Rigid PVC finishing edge profile for outside corners and terminations.
  - .2 Visible width 3 mm, depth to suit application.
  - .3 Colour: light (classic) grey.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 8 of 10

- .4 Standard of acceptance: Schluter Jolly-P.
- .4 Flooring transitions:
  - .1 Aluminum wedged-shaped transition strip designed to protect tile edges and provide a smooth transition between tile and adjacent, lower floor coverings.
  - .2 Height: difference between floor coverings x recommended length for compliance with local accessibility regulations.
  - .3 Colour: satin anodized.
  - .4 Standard of acceptance: Schluter Reno-U.
- .5 Sealant:
  - .1 Refer to Section 07 92 00 – Joint Sealants for general use products.
  - .2 For use in shower areas:
    - .1 Neutral-curing one-component silicone sealant with anti-fungal treatments, specifically designed for use in swimming pools and shower areas.
    - .2 Material properties:
      - .1 Viscosity at 23°C: pasty, stable.
      - .2 Density at 23°C as per ISO 1183-1: 1.0 g/cm<sup>3</sup>.
      - .3 Shore A hardness as per ISO 868: ~ 30.
      - .4 Permissible movement capability: 20%.
      - .5 Stress expansion modulus at 100% as per DIN 53 504, S3A: 0.6 N/mm<sup>2</sup>.
      - .6 Tensile expansion as per ISO 37, S3A: ~ 350%.
      - .7 Tensile strength as per ISO 37 S3A: ~ 1.5 N/mm<sup>2</sup>.
      - .8 Temperature resistance range: -40°C to +180°C.
      - .9 Shrinkage of volume as per ISO 10563: < 10%.
    - .3 Colour matched to grout (as near as possible).
    - .4 Standard of acceptance: Ottoseal S 140 from Otto Chemie.

### **PART 3      EXECUTION**

#### **3.1      INSTALLATION**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual, latest edition, except where specified otherwise.
- .2 Apply primers, mortar, waterproofing membrane, tile and grout to clean and sound surfaces.
- .3 Install all products specified in this section as per the manufacturer's recommendations for the specific application, unless otherwise noted.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 30 00 – Ceramic and Porcelain Tiling

Page 9 of 10

- .4 Fit tile around obstructions, corners, fixtures, drains and any other built-in or fixed objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .5 Maximum surface tolerance 1:800.
- .6 Make joints between tile uniform, plumb, straight, true, even and flush with adjacent tile. Align patterns. Joint width as specified above.
- .7 Lay out tiles so perimeter tiles are a minimum of half a tile in width.
- .8 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .9 Install all accessories specified above where required in tile systems.
  - .1 Install cove base profiles for flooring types as indicated.
  - .2 Install transition strips at junction of tile flooring and dissimilar materials.
  - .3 Install exposed-edge protection for all tile.
  - .4 Install movement joints in tile aligned with movement joints in substrate.
    - .1 Ensure movement joints are located at a maximum spacing of 5 metres in any direction.
    - .2 Add movement joints in addition to those aligned with substrate movement joints to achieve conformance with the maximum spacing.
  - .5 Install silicone sealant around all penetrations, including pool accessories and handrails.
  - .6 Install silicone sealant at all inside corner joins to allow for movement between adjacent, intersecting wall surfaces.
- .10 Allow minimum 24 h after installation of tiles, before grouting.

### **3.2 PROTECTION OF FINISHED WORK**

- .1 Prohibit traffic on new installations for 48 hours.
- .2 Once completed, protect floors from damage due to construction traffic until Substantial Performance deficiency reviews, or where directed by Owner's representative.
  - .1 Do not allow foot traffic over unprotected non-slip tiles.

### **3.3 CLEANING**

- .1 Upon completion and final cure of grouting, thoroughly clean all tile surfaces as per manufacturer's instructions before requesting a final deficiency review by Owner's representative.
- .2 Tile surfaces to be free from grout haze and mortar or grout residue.

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

**IFT May 16, 2023**

**Section 09 30 00 – Ceramic and Porcelain Tiling**

**Page 10 of 10**

---

**3.4 COMMISSIONING**

- .1 Train user staff in the care and cleaning of tile surfaces.
- .2 Train user staff in the repair and/or replacement of damaged tiles.

**END OF SECTION**

---

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 51 13 – Acoustical Panel Ceilings

Page 1 of 4

---

**PART 1**

**GENERAL**

**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .4 Section 01 78 00 - Closeout Submittals.
- .5 Section 06 10 00 - Rough Carpentry.
- .6 Section 09 21 16 - Gypsum Board Assemblies.
- .7 Section 09 53 231 - Acoustical Suspension.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM E1264, Classification for Acoustical Ceiling Products.
- .2 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.

**1.3 SUBMITTALS**

- .1 Submit manufacturer's printed product literature, specifications and data sheet.
- .2 Submit samples of each type acoustical unit.

**1.4 MOCK-UP**

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up of a 10 m<sup>2</sup> minimum of acoustical tile ceiling including one inside corner and one outside corner. Mock-up will be reviewed by Owner's Representative during the next scheduled site visit. Mock-up must be reviewed before proceeding with ceiling work.
- .3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

**1.5 ENVIRONMENTAL REQUIREMENTS**

- .1 Permit wet work to dry before commencement of installation.

**Memorial University of Newfoundland  
Canada Games Facilities Upgrade  
MUN File: AQ-004-19**

IFT May 16, 2023

Section 09 51 13 – Acoustical Panel Ceilings

Page 2 of 4

- .2 Maintain uniform minimum temperature of 15°C and humidity of 20 - 40% before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

## **1.6 EXTRA MATERIALS**

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide additional acoustic panel units as follows:
  - .1 Type C1: 2% of gross ceiling area.
  - .2 Type C12: 5% of gross ceiling area.
  - .3 Type C13: 10%: of gross ceiling area.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Store where directed by Owner's Representative.

## **1.7 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for acoustical ceilings for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Refer to reflected ceiling plans for acoustical tile locations.
  - .1 Where ceiling tiles are existing and some areas are required to be removed and replaced to facilitate the running of services, structural reinforcing or other work, such tiles may be reused. If they are damaged or not suitable for reuse, match replacement tiles to existing materials. Contractor may choose to replace all tiles in disturbed areas. In that case, replace with tiles for typical ceilings as specified below. Replacement tiles to be sized to match existing format.
- .2 All ACT ceilings except high-humidity areas noted in 2.1.3.
  - .1 Mineral fiber acoustic units for typical suspended ceiling system: to ASTM E1264, Type IV, Form 2, Pattern E, Fire Class A.
    - .1 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.
    - .2 Smoke developed 50 or less in accordance with CAN/ULC-S102.
    - .3 Noise reduction coefficient (NRC)  $\geq 0.75$ .